Interreg - IPA CBC
Romania - Serbia

EUROPEAN UNION

Training for sustainable interventions in emergency situations (earthquakes, floods, dangerous climate events, contamination accidents, etc) to be managed by local public administrations in the cross-border cooperation area

Cooperation beyond borders.
Interreg-IPA Cross-border Cooperation Romania-Serbia Programme is financed by the European Union under the Instrument for Pre-accession Assistance (IPA II) and co-financed by the partner states in the Programme.

Table of content

Module 1

RORS283 - Horizontal principles

Description

Sustainable development (environment)

positive

The project contributes to increasing the safety in conditions of natural risk and to increasing the responsibility of the population towards the environment.
The materials developed and the events will include messages that promote sustainable development and awareness related to environmental protection and resource efficiency. Sustainable development is observed in the preparation, implementation and post-implementation phase. Round tables on sustainable development will be organized.

Equal opportunities and non-discrimination

positive

Round tables on Equal Opportunities and Non-Discrimination will be organized and a balanced participation of participants in decision-making will be pursued. The materials contain information that promotes equal opportunities and non-discrimination. There are collaboration agreements with the Aurora CS School Center for Inclusive Education, Radio Reșița. CJCS provides Braille and visual symbols for people with disabilities.

Equality between men and women

positive

The project promotes the European principle of facilitating reconciliation between work and family life. Supports strengthening family ties and strengthening interpersonal relationships, as well as weekend work. Work relocation allows employees who are parents to have a flexible work schedule for the project. Post-implementation questionnaires will be completed through a participatory approach.

(Sustainable Development) - Contributing to efficient water supply, wastewater treatment and water reuse

positive

The project will contribute to the efficient supply of water, wastewater treatment and reuse of water through common measures and methodologies established in case of flood risk.
The acquisitions of the city of Vrsac will contribute to the efficient supply of water, wastewater treatment and water reuse.

(Sustainable development) - Contributing to efficient waste management, reuse and recycling

positive

The waste resulting from the implementation of the activities will be collected selectively, taking into account the major project implemented by the Caraş-Severin County Council "Integrated waste management system". A message will be written on the promotional materials that will be produced through the project urging the efficient management, reuse and recycling of waste.

(Sustainable development) -Contribution to sustainable mobility and interoperability;

positive

The project also contributes to sustainable mobility and interoperability through common cross-border risk methodologies and through the cross-border framework / cross-border collaboration agreement to be developed.

(Sustainable development) - Implement green public procurement in a systematic way

positive

The equipment that will be purchased through the project will be energy efficient. To reduce the impact on the environment, "green procurement" procedures will be applied.

Public procurement will take into account the provisions of Law no. 69 of April 25, 2016 on ecological public procurement - Romania.

(Sustainable Development) - Contributing to energy efficiency, the use of renewable energy and the reduction of greenhouse gas (GHG) emissions

positive

Minibuses, fire trucks, purchased equipment have low fuel consumption, the latest model being max. 3 years.

Purchasing new technology equipment will help reduce GHG emissions.

The cars purchased will be used in accordance with the instructions in the Fuel Consumption and CO2 Emissions Guide provided by the manufacturer.

(Sustainable Development) - Contribution to the development of green infrastructures, including sound management of Romanian Natura 2000 sites and equivalent Serbian protected areas

positive

The project has a positive impact on the environment, by reducing the number of fires and areas affected and flood damage in the Natura 2000 project area on the RO side and equivalent on the Serbian side.

The Green IT platform will help protect the environment, protected natural areas, nature reserves and parks, Nature 2000 sites and protected natural areas on the Serbian side.

Sustainable development) - Contributing to raising awareness of climate change adaptation and risk prevention

positive

Climate change poses major challenges for the project area and requires specific responses. Extreme weather events may occur more frequently in the project area. Frequency and severity of floods, forest fires, storms, erosion, etc. are likely to present major challenges in interventions in the coming years.

(Sustainable development) - Contribution to more employment opportunities, education, training and support services in the context of environmental protection, risk management and sustainable development, etc.

positive

The project provides training and specialization for personnel involved in the protection area. Specialized staff will participate together in a diving course for 2 teams of 4 people, EU-recognized qualifications. Cross-border personnel will be trained to use the equipment for flood and fire interventions. The project activities will contribute to improving the level of specialization of staff in emergency interventions.

Joint staff training will be organized.

I. The project "Sustainable common network for emergencies in Banat". Brief presentation

The project "Sustainable Joint Network for Emergencies in Banat" obtained funding through the INTERREG IPA Romania-Serbia Cross-Border Cooperation Program APPEAL II 2018, following the decision of the Joint Monitoring Committee of the Program taken on January 31, 2019.

The project has a value of almost 1.5 million euros, and has an implementation period of 24 months. Partners are: Caraş-Severin County Council, ISU Semenic, Vrsac City Hall and the Intercommunity Development Association for Emergency Management ADIVEST. The project aims to strengthen the capacity of local authorities to prevent disasters, environmental accidents and emergency response in the cross-border area, represented by the counties of Caraş-Severin, Timiş (Romania) and South Banat District (Republic of Serbia).

The general objective of the project is to strengthen the operational and institutional capacity of the local authorities responsible for emergencies, disaster prevention, mitigation, prevention of environmental accidents and emergency response in the Romanian-Serbian cross-border area, represented by the counties of Caraș-Severin, Timiș and the South Banat District.

The subject of the project consists in cooperation at the level of county and local public administrations and specialized intervention institutions in the area of cross-border cooperation in order to improve the technical basis of intervention, strengthen the professional capacity of intervention staff, develop a common risk management system.

Within the project, intervention equipment for emergency situations will be purchased, joint Romanian-Serbian tactical exercises and military diving courses will be organized for ISU “SEMENIC” and ISU “BANAT” Timiș. Training sessions for intervention and administrative staff will be organized, a research study on emergencies and environmental risks in the project area will be developed and an awareness campaign will be carried out for the population on risk factors.

Also, other objectives of the project will consist in:

Realization of a common professional training program for public administrations and cross-border intervention units, having as theme the common risks identified;

Formulation of methodologies for common intervention, for the major risks identified;

Formulation of a cross-border agreement on joint, integrated and sustainable management of emergency situations;

Development of a common web platform for alerting in cross-border emergencies.

II. Duties and responsibilities of local public administrations in emergency situations created by natural hazards (floods, earthquakes, dangerous weather conditions)

Emergency management. General aspects

The emergency situation is characterized by its magnitude, which represents the size of the area of manifestation of its destructive effects, in which the lives of people, the functioning of democratic state institutions, the values and interests of the community are threatened or affected. Also, the emergency situation is characterized by its intensity which can be defined as the speed of evolution of destructive phenomena and the degree of disturbance of the state of normalcy. The elements specified above determined the legislator to regulate its management for the emergency situation.

From a legal point of view, emergency management represents the set of activities and procedures used by decision makers, institutions and public services empowered to identify and monitor risk sources, assess information and situation analysis, develop forecasts, establish options for action and their implementation in order to restore the situation of normalcy.

Emergency management is the identification, registration and assessment of risks / types of risk and their determinants, notification of stakeholders, warning the population, limiting, eliminating or counteracting risk factors and last but not least the negative effects and impact produced by the negative / exceptional events they can generate.

In other words, emergency management means the application of policies, procedures and practices whose identified objectives are the analysis, assessment, treatment, monitoring and reassessment of risks in order to reduce them, so that human communities (citizens) can live, work and have the needs and aspirations answered to in a sustainable physical and social environment. In other words, the management of emergency situations has as "zero priority" the increase of the degree of civil security.

Starting with 2004, on the Romanian territory, in order *to prevent and manage emergencies, to ensure and coordinate the human, material, financial and other resources necessary to restore the state of normality*, (based on Government Ordinance no. 21/2004 with subsequent amendments) the ***National Emergency Management System (SNMSU)*** was established.

It has been organized by the public administration authorities and consists of a network of competent bodies, organs and structures, constituted on levels or fields of competence, with the following composition:

A. Emergency Committees:

• National Committee for Special Emergencies / National Committee for Weather and Disasters (as appropriate);

• Ministerial committees and other central public institutions for emergencies;

• County Committees for Emergency Situations, respectively the Bucharest Municipality Committee for Emergency Situations;

• Local emergency committees.

• General Inspectorate for Emergency Situations;

• Professional emergency services and voluntary emergency services;

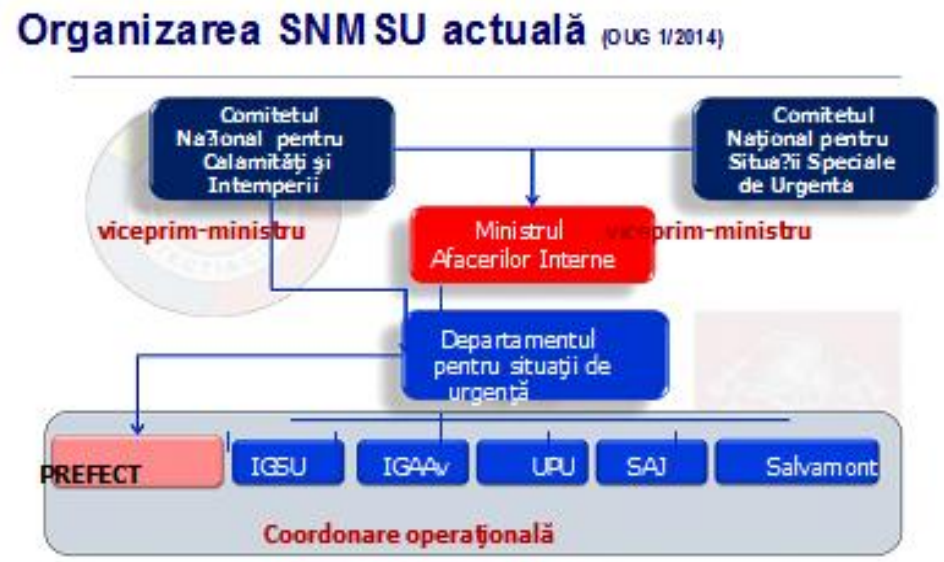
• Operational centers and intervention coordination and management centers;

• The commander of the action.

Emergency committees are inter-institutional management support bodies, provided by their leaders. They will be organized and operated centrally and locally.

The ministerial committees and other public institutions for emergency situations (composed of decision-makers, experts and specialists from their own apparatus), are set up and function under the leadership of ministers and heads of central public institutions, respectively.

Diagram on the emergency management system:



TERRITORIAL AND LOCAL LEVEL:

Bucharest Municipal Committee for Emergency Situations - composed of the mayor general, mayors of sectors, heads of decentralized, decentralized and communal household services, managers of institutions, autonomous utilities and companies that perform support functions in managing emergencies, as well as managers of economic agents which, through the specifics of the

activity, constitute potential risk factors. The committee is set up under the guidance of the prefect;

County Committees for Emergency Situations - consisting of: the prefect as president of CJSU, heads of decentralized, decentralized and communal household services and other managers of institutions and companies of county interest who perform support functions in emergency management, as well as managers of economic agents which, through the specifics of the activity, constitute risk factors. The county committee is constituted, under the guidance of the prefects.

Local committees for emergency situations - at the level of municipalities, cities, sectors of Bucharest and communes - members: deputy mayor, commune secretary, city or municipality, as appropriate and representatives of public services and main institutions and economic agents in the administrative-territorial unit respectively, as well as managers or managers of economic agents, subsidiaries, branches or local work points, which, through the specifics of the activity, constitute risk factors. The committee is set up under the leadership of the mayor and with the opinion of the prefect.

THE CENTRAL LEVEL

The General Inspectorate for Emergency Situations (IGSU) - a specialized body of the Ministry of Internal Affairs, ensures the unitary and permanent coordination of the activities of prevention and management of emergency situations. Through the National Operational Center it ensures the permanent technical secretariat of

The National Committee for Weather and Disasters and the unitary coordination of interventions for the National Committee for Special Emergency Situations and performs the functions of monitoring, evaluation, notification, pre-alarm, alerting and operational technical coordination at national level of structures with responsibilities in emergency management;

For the coordination and management of actions during emergencies, the **National Center for Coordination and Management of Intervention** is activated at the central level, a structure intended to support the decision, a structure that is activated at the disposal of the Head of the Department for Emergency Situations (MIA) and incorporates specialists. and experts, representatives of the central structures present within CNCI / CNSSU.

Operational centers - at the level of ministries, other central public institutions with complex attributions and functions in emergency management - fulfilling the same functions as IGSU, in the areas of competence of the ministries and central public institutions at which they operate.

Emergency management operates according to the following principles:

- Prevention and forecasting;
- Protecting and saving the life of the population;
- Respect for fundamental freedoms and human rights;

• Assuming responsibility for emergency management;

• Continued cooperation at regional, national and international level between similar organizations and bodies;

• The activities carried out in order to manage emergencies must be transparent, so that they do not exacerbate the already existing effects;

• Graduality and continuity of emergency management actions, from the stage of the authorities of the local public institutions to the level of the central public institutions, depending on how intense and to what extent they are;

• Operativity, an active cooperation and a hierarchical subordination of the components that make up the National Emergency Management System.

The situation of hazards. Brief presentation

Romania has an area of 238,391 km2 and a population of 20,121,641 inhabitants, being the largest country in south-eastern Europe. The urban network consists of 314 cities with a share of the urban population of 54.4%, of which the capital Bucharest has a population of 1,883,425 inhabitants, 23 cities are large, with a population ranging between 100,000 and 400,000 inhabitants, and the rest of the cities are medium and small. The rural network includes 2,683 communes, made up of 13,092 villages, with a share of 45.6% of the country's population. The data presented are those resulting from the last census (20.09.2011).

Romania is exposed to a diversity of hazards that result from the interaction of natural, demographic, social and anthropic factors, respectively infrastructure elements, such as constructions, roads, railways. This interaction and the increase of losses due to extreme events become more and more complex, simultaneously with the tendency of concentration of the population in large urban agglomerations and with the extension of the inhabited areas on inadequate lands, exposed to floods or landslides.

Climate change related to global warming trends in turn generates uncertainties regarding the intensity and frequency of hazards, but also the emergence of new phenomena, such as tornadoes or desertification. For the last two decades, there has been an increase in the degree of torrential rainfall and a significant increase in the frequency of floods, alternating with the accentuation of dry periods characterized more and more often by reaching extreme temperatures.

In the years following the Revolution, there was a worsening of environmental conditions caused by uncontrolled deforestation, destruction of forest curtains and irrigation systems, accentuating the impact of natural hazards on infrastructure and population.

Also, due to natural causes, Romania has faced *epidemics, but also pandemic threats, eloquent examples are West Nile neuroinfection in 1996, meningitis with 3/23 Enterovirus Echo in 1999, anthrax in 2000, the appearance*

of influenza infection with a new influenza serotype or the threat of H5N1 avian influenza epidemic.

Also, following the successive waves of measles from 2016-2020, the following data were recorded in Romania: 4,000 cases and 18 deaths Between January 1, 2016 and March 31, 2017, 18,711 cases (of which, 64 deaths) until the end of November 2019 and 20204 cases (of which, also 64 deaths) on 17.07.2020. Globally, in 2018, more than 140,000 people died of measles, according to the World Health Organization, which led to the classification of the epidemic by the CDCP (Center for Disease Control and Prevention) at " Level 1 Alert ".

In January 2020, the World Health Organization (WHO) said that the emergence of a new coronavirus disease in Hubei Province, China is a global state of public health emergency. Two months later, on March 11, 2020, the WHO declared the outbreak of the new COVID-19 coronavirus infection a pandemic.

SARS-Cov-2 is a virus that causes COVID-19 disease and has now become one of the most severe pandemics in human history. The last pandemic of this size was the Spanish flu, which in 1918-1919 claimed between 50 and 100 million victims.

This pandemic has had and continues to have an enormous socio-economic impact on the evolution of all branches of the global and national economy, especially on SMEs, with an unprecedented reduction in economic activity and working time.

Floods are natural hazards with a strong impact on the network of settlements, roads and land along the 4,000 rivers in Romania. Statistically, the floodplains amount to an area of 3.5 million hectares, the largest areas being located along the Danube and the main rivers in the Romanian Plain, respectively Siret, Buzau, Ialomiţa, Argeş, Olt, Jiu, but also in the Banat Plain. Crişană, respectively Someş, Crişul Mic, Crişul Mare, Mureş.

In the mountainous and hilly sites, where the riverbeds have a steep slope between 100 and 200 m / km and narrow meadows, the floods are accompanied by intense processes of bank erosion causing landslides that can affect the valleys. Anthropogenic activities are the main factor that leads to changes in the propagation of flood waves.

Deforestation in different sectors of the Carpathians has led to an increase in the rate of concentration of runoff, intensification of erosion processes, transport and deposition of alluvium, as well as the uplift of riverbeds in the plains, thus increasing the risk of spills. Dams and dams have been built along the Danube and the main rivers, which have proved insufficient and, in some cases, ineffective in extreme situations.

The last century has been marked by large-scale floods that have affected large areas causing great material and human damage, for example in 1969, 1970, 1975, 1991, 1995, 1997, 1999, 2000, 2002, 2005, 2006 and 2015.

Between June 1 and July 30, 2020, cumulative rainfall was recorded 150 l / sqm - 170l / sqm which led to:

- the formation of a historical flood on the river Timiș and tributaries Bistra and Pogăniș near Lugoj, at a level that has not been recorded for 200 years;
- floods in 90 localities in 19 counties, including Caraş-Severin and Timiș, with negative consequences such as: blockage of the Resita-Caransebes railway with alluvium and fallen trees and severe damage to some roads (DN 57, 58, 58B, 68, E70, DN 6, DN 58 A).

Landslides are natural hazards closely related to floods and floods. Severe soil erosion, ravaging processes, landslides and mudslides affect land for agricultural use in a proportion of 30-40% of the total area. Landslides, triggered by heavy rains and earthquakes, affect the localities located on the slopes, and floods are a major risk factor for the network of settlements, roads and land along the main waterways.

Landslides are the main natural hazards that affect the slopes and have a decisive role in the evolution of the relief of the hilly and intra-Carpathian hilly regions and in the mountainous lands made up of flysch.

In recent years, there has been an increase in the magnitude of this hazard, its materialization culminating in the occurrence of negative events such as:

- 17.06.2020 On the A1 highway (Timisoara de Arad section) the traffic was disturbed, after in the area of Ortisoara locality, due to the abundant rain, a landslide took place, and a wave of earth reached the road;
- 18.05.2020 the train traffic was stopped for over 18 hours on the railway section 915, at railway kilometer 8, between CF Brebu and Cornuțel Banat stations, Caraș-Severin county.

Seismic risk: Romania has a high seismic risk, the hazards of this type having the greatest impact on the population. The risk is accentuated by the large number of tall and old buildings, most of them in Bucharest and large cities, but also by the economic inability of the owners to take rapid consolidation measures.

Through the international projects, RADIUS -1996-2000- of the United Nations and the Risk Assessment Tool for the Diagnosis of Urban Areas -RISK-2000- of the European Union, in-depth research of seismic engineering has been carried out and the means of risk monitoring have been modernized, creating a national network of sensors.

Also, in the period 2020-2022, at the level of the National Research-Development Institute for Earth Physics (INFP) the following projects are underway:

1. The DETACHED project - Earthquake alarm system with decentralized decision in each node aims to create a robust / resilient and versatile tool

with low costs for users, with direct implications for society and in the management of critical infrastructures, mitigation of risks associated with dangerous phenomena and reducing human losses.

2. The PREVENT project aims to use research-based knowledge and ICT technologies to develop, test and promote an online reference service platform in which real-time data (seismic, environmental) or other types of data are used, easily integrated, processed using state-of-the-art algorithms, also in real time, and decision-making solutions to be delivered for emergencies, monitoring the health of the structure and business continuity planning, using IoT capabilities.

Romania's seismic risk comes from Vrancea, a seismological region where earthquakes occur characterized by the release of a large amount of energy, causing the greatest damage to the population. In addition to this region, on the territory of Romania, other seismic areas are also known, such as: Făgărăşan Area, Banatic-Danubian Area, North-West Area, Transylvanian Area and Pontic Area.

According to studies conducted in this field by specialized institutions, earthquakes with a magnitude of 7 on the Richter scale have an average return period of 32 years. Based on the same studies, periods of recurrence of earthquakes with different intensities in Bucharest were established.

At the national level, the strongest earthquake with epicenter in Vrancea, was registered on 26.10.1802 and had a magnitude, on the Richter scale, of 7.5. - 7.8 which corresponds to an IX + intensity on the Mercalli scale in the epicentral area and VIII in Bucharest.

In Caras-Severin County, the last event with notable consequences was the earthquake, produced on 24.05.2002, around 23.42, near the city of Moldova Noua. The earthquake, with a magnitude of 4.8 on the Richter scale and 6.5 on the Mercalli scale, had its epicenter ten kilometers below the Danube, in the sector between Moldova Noua and Pescari locality, Caras-Severin county. The earthquake caused five people to be slightly injured, and buildings in Moldova Noua were also affected.

Due to the long interval of return of large magnitude earthquakes, the perception of seismic risk decreases, which can be manifested by neglecting the design and construction, but also by neglecting adequate education and information on such situations. In areas where the recurrence of strong earthquakes occurs at long intervals, the opinion poll highlighted in most cases the non-existence of a preventive seismic culture, and this situation can actually produce catastrophic effects in case of a major earthquake.

Flood risk: flood management is not only a national issue, but also a local one.

From my point of view, an important risk that I want to debate is the risk of floods and the implications of local public authorities, mainly of the Prefect's Institution, in the management of this risk.

Given the importance of flood risk management, the National Flood Risk Management Strategy was developed. The purpose of this strategy is to reduce the impact that floods can have on the citizens of the state and their assets through proper coordination and policies capable of meeting the required standards, in order to protect the environment.

"The flood management strategy forms the framework document for the preparation and adoption of specific measures and actions aimed at:

- knowing the risk of floods;
- monitoring the flood phenomenon;
- informing the population;
- considering the risk of floods in all landscaping activities;
- adoption of preventive measures;
- emergency preparedness;
- reconstruction and learning from previous experience."

The strategy has three objectives: environmental, social and economic. The National Flood Management Strategy aims to increase the value of life by reducing the damage that can be caused by floods, as well as the proper management of resources, in order to build, maintain and capitalize on existing infrastructure and means to reduce risk in terms of floods.

The prefect is the chairman of the County Committee for Emergency Situations. According to Law no. 481 of November 8, 2004 on civil protection, "The prefect has the following main attributions:

- approves the operative and training plans on the line of civil protection and the planning of exercises and other activities carried out at the level of the administrative-territorial unit;
- pursues the fulfillment of the civil protection measures at the level of the administrative-territorial unit;
- orders, according to the law, the establishment of the alert state, the activation or use, as the case may be, of the intervention formations;
- approves the scheme with territorial risks drawn up by the Inspectorate for Emergency Situations;
- ensures conditions for the good development and integration of the activity of the intervention forces from other counties or of the international teams, as the case may be, arrived in the administrative-territorial unit in order to limit and eliminate the effects of disasters;
- presents to the County Council or the General Council of the Municipality of Bucharest, as the case may be, proposals for completing the notification and alarm system of the population, the housing fund, the material base

and other measures for protection of the population, material goods, cultural values and of the environment;
- exercises control over the application of measures in civil protection situations.

III. Local emergency management

The management of emergency situations generated by floods, dangerous meteorological phenomena, accidents at hydrotechnical constructions and accidental pollution is achieved through preventive, operative intervention and rehabilitation measures, which consist in identifying, registering and evaluating the types of risk and their determinants, notifying the interested factors, warning, alarming, evacuation and sheltering the population and animals, limiting, removing or counteracting the negative effects produced as a result of the manifestation of the risk factors.

The measures of limitation, removal or counteracting the effects of the types of risk, provided in art. 5, is an obligation for the central and local public administration bodies with attributions in this field and for all legal and natural persons, except for the disabled persons, the elderly, pregnant women and children.

The owners, in any capacity, of dams and other hydrotechnical constructions whose damage or destruction may endanger the population and its material goods, social objectives and productive capacities or may harm the environment, are obliged to maintain, repair and to exploit them properly, to equip these works with measuring and control equipment necessary for monitoring their behavior in time, to install warning-alarm systems of the population in the localities located downstream of dams, to ensure in case of imminent danger the alarm of the population from the risk area created as a result of its own activities, informing the local and / or county committee, as the case may be, and the county operational center and to organize the supervision, intervention and rehabilitation activity according to the regulations approved by the water management authorizations, plans flood and ice protection accidents at hydrotechnical constructions, action plans in case of accidents at dams and plans for preventing and combating accidental pollution.

Locally:
County Committees for Emergency Situations - consisting of: the president of the county council, heads of decentralized services and communal household and other managers of institutions and companies of county interest who perform

support functions in emergency management, as well as agent managers which, by the specifics of the activity, constitute risk factors. The county committee is constituted, under the guidance of the prefects.

Local committees for emergency situations - at the level of municipalities, cities, sectors of Bucharest and communes - members: deputy mayor, commune secretary, city or municipality, as appropriate and representatives of public services and main institutions and economic agents in the administrative-territorial unit respectively, as well as managers or managers of economic agents, subsidiaries, branches or local work points, which, through the specifics of the activity, constitute risk factors. The committee is set up under the leadership of the mayor and with the opinion of the prefect.

The professional emergency services, functioning as County Inspectorates, respectively of the Municipality of Bucharest - specialized bodies within the Ministry of Internal Affairs, ensure at county and Bucharest level the unitary and permanent coordination of the activities of prevention and management of emergency situations. Through the operational centers it ensures the permanent technical secretariat of the County Committee, respectively of the Municipality of Bucharest and fulfills the functions of monitoring, evaluation, notification, pre-alarm, alerting and operational technical coordination of emergency situations at the level of Bucharest county / municipality.

At the level of the Municipality of Bucharest and the counties, in case of an emergency situation, the Center of the Bucharest Municipality for Coordination and Management of Intervention (CMBCCI) is activated, respectively the county center for coordination and management of intervention (CJCCI), intended to support the decision of the Bucharest Committee Emergency Situations / County Emergency Committee. CJCCI is activated at the proposal of the chief inspector of the Bucharest Inspectorate for Emergency Situations / of the county inspectorate for emergency situations, with the approval of the prefect. CMBCCI / CJCCI is the structure that incorporates specialists and experts, representatives of the structures present within CMBSU / CJSU.

Temporary operational centers - set up to declare the state of alert or when the situation requires it at the level of municipalities, cities and communes; in normal times they are provided by specific persons designated within the own apparatus of the respective authorities.

Emergency cells - formed during emergency situations at the level of endangered or affected companies, which work with the structures of the National System.

Types of risk generating emergencies:

- ***floods***, as a result of natural overflows of watercourses caused by increased flows due to precipitation and / or sudden melting of the snow cover or blockages caused by insufficient dimensions of the drainage sections of bridges and footbridges, ice blockages or of floats (waste and wood),

landslides, alluvium and avalanches of snow, as well as floods by runoff from the slopes;

- ***floods caused by incidents, accidents or damages to the hydrotechnical constructions;***
- ***floods caused by the rise of the groundwater level;***
- ***floods caused by sea storms;***
- ***hydrological drought*** (water shortage at source due to prolonged drought);

The following are directly or indirectly exposed to these types of risk:

- human life and their property, as well as animal life;
- social, cultural, administrative and heritage objectives;
- productive capacities (commercial companies, industrial platforms, power plants, agro-zootechnical farms, fishing facilities, ports and others);
- dams and other hydrotechnical works that represent downstream risk sources, in case of accidents;
- road, rail and naval communications routes, electricity, gas supply networks, water and sewerage sources and systems, treatment and treatment plants, telecommunication networks and others;
- natural environment (aquatic and terrestrial ecosystems, forests, agricultural lands, urban areas of localities and others).

Emergency management is done by:

- ***prevention measures and preparation*** for interventions;
- ***urgent operative intervention*** measures after the onset of dangerous phenomena with serious consequences;
- subsequent intervention ***measures for recovery and rehabilitation***.

The state of defence generated by floods is triggered when the dangerous phenomenon occurs (exceeding the critical thresholds) or when the probability of occurrence is established by forecast.

These thresholds are color-coded as follows:

YELLOW CODE, if the predicted hydrological phenomena can be temporarily dangerous for certain activities;
ORANGE CODE, if the hydrological phenomena predicted to be dangerous have a high degree of intensity and can cause significant social and economic damage;
RED CODE, if the hydrological phenomena predicted to be dangerous can have disastrous effects, with a potential threat to life and property.

In case of water shortage at the source, caused by prolonged drought - hydrological drought, the following thresholds are set:

NORMAL PHASE - when the source flow is higher or at the limit equal to the flow of attention, but can ensure the water requirements of the uses

ATTENTION / WARNING PHASE - when the source flow is decreasing, but can satisfy the minimum flow required for uses;
RESTRICTIONS PHASE - when the source flow is lower than the minimum flow required for uses.

Coding procedure for hydrological warnings and alerts issued in the event of dangerous hydrological phenomena at national or regional level

In situations where exceedances of defence quotas on the Danube and inland rivers are forecast, as well as significant runoff on slopes, torrents, non-permanent valleys, streams, the National Institute of Hydrology and Water Management issues a hydrological warning or hydrological alert, as appropriate. which briefly presents the phenomenon, the intensity, the possible effects, the areas that may be affected, the probable moment of its onset and its duration, indicating the probability of occurrence of the dangerous phenomena.

The hydrological warning is issued when the possibility of exceeding the defence quotas or the possibility of producing other dangerous hydrological phenomena (important leaks on slopes, torrents, non-permanent valleys, streams) is foreseen, based on meteorological forecasts.

The hydrological alert is issued when the imminent exceeding of the defence quotas and / or the production of other dangerous hydrological phenomena (important leaks on slopes, torrents, non-permanent valleys, streams), based on meteorological forecasts and river conditions.

The following color codes will be used to mark the intensity of the flood production phenomenon corresponding to an area or a river sector:

YELLOW: risk of floods or rapid increases in water level, not leading to significant damage, but which requires increased vigilance in case of seasonal activities and / or exposed to floods;

ORANGE: risk of floods generating significant spills, likely to have a significant impact on the life of communities and the safety of goods and individuals;

RED: risk of major floods. Direct and widespread threat to the safety of persons and property.

Establishing defence thresholds as follows:

YELLOW: **corresponds to the attention situation:**

The attention situation has the significance of a special situation and does not necessarily represent a danger. The consequences of entering the situation of attention are:

- increase of observations and measurements that are made to monitor the phenomenon and to forecast its evolution;

- checking the constructions with defence role and following the ensuring of the high water drainage conditions;
- information about the possibility of accidental pollution.

ORANGE: **corresponds to the flood situation**:

The alarm situation is characterized by an evolution of the phenomena in the direction in which it can lead to a certain danger (for example: further increase of levels on the watercourse, increase of the infiltrated flows through the hydrotechnical retention constructions and the entrainment of materials from the body increase in precipitation intensity or wind speed, confirmed accidental pollution requiring interventions and others). **The triggering of the alarm state leads to the entry into the operative situation of the emergency committees.**

The activities carried out are both activities meant to control the phenomenon, as well as preparatory activities for the eventuality of the danger situation.

RED: corresponds to the danger situation:

The danger situation is triggered when the danger becomes imminent and it is necessary to take exceptional measures to limit the effects of floods (evacuation of population, animals, material goods, special measures in the operation of hydroelectric constructions with flood protection, restrictions on traffic on some roads and bridges, as well as on waterways), as well as for combating accidental pollution with serious effects on the ecosystem, changing water quality parameters, destroying fauna and ichthyofauna, the environment and others, or exceeding the territory of competence).

The main flood protection characteristics are:

- zonal warning sizes, established at the hydrometric stations and at the pluviometric stations located upstream of the endangered objectives, as the case may be, for precipitations, levels or flows;
- local defence sizes, set near targets, in the form of levels or flows.

The characteristic defence sizes defined above in case of floods are:

For dammed areas of watercourses:

- **level of the first phase of defence** - when the water level reaches the foot of the outer slope of the dam on one third of its length;
- **level of the second phase of defence** - when the water level reaches half the height between the level of phase I and that of the third phase of defence;
- **level of the third phase of defence** - when the water level reaches 0.5 - 1.5 m below the level of the known maximum water levels or below the level of the maximum level for which the respective dam was dimensioned or when exceeding a critical point.

For non-dammed areas of watercourses:

- **attention level**-the level at which the flood danger is possible after a relatively short time interval, in which the defence or evacuation actions can be organized;
- **flood quota** - the level at which the flooding of the first objective begins;
- **danger level** - the level at which special measures are needed to evacuate people and goods, restrictions on the use of bridges and roads, as well as taking special measures in the operation of hydro-technical constructions.

Fire protection obligations:

Obligations of the mayor (art. 14 of L307 / 2006):

a) ensures the elaboration of the risk analysis and coverage plan and its application;
b) ensures the observance of the performance criteria for the establishment of the voluntary emergency service and the elaboration of its organization and functioning regulation;
c) coordinates the permanent organization of the intervention in case of fire at the level of the administrative-territorial unit, ensures the participation in the intervention of the voluntary emergency service with the means and the management of the intervention, until the fire is extinguished or until the arrival of the inspectorate forces;
d) ensures the control of the observance of the fire protection measures during the assemblies or of the public manifestations;
e) ensures the control of the observance of the fire protection measures at the technological constructions and installations belonging to the public and private domain of the administrative-territorial unit, as well as at the public institutions;
f) orders the verification of the fulfilment of the measures established by the approvals, authorizations and agreements that it issues;
g) ensures the realization and maintenance in working order of the access roads, of the announcement, alarm systems, as well as of the water supply in case of fire;
h) organizes and executes, through the voluntary emergency service, the control of the observance of the fire protection rules at the citizens' households; informs the population on the behaviour and intervention in case of fire;
i) ensures the employment of the voluntary emergency service with certified personnel in accordance with the law, as well as its professional training and coaching;

j) ensures the conditions for the participation in competitions of the voluntary emergency services and of the student circles Friends of the firemen;
k) ensure the endowment of voluntary emergency services, according to the norms, with technical means for fire protection and specific protection equipment, fuels, lubricants and other means necessary to support intervention operations, including food and antidote for participants in long-term interventions;
l) immediately informs, by any means, the inspectorate about the outbreak and extinguishment, with its own forces and means, of any fire within the administrative-territorial unit, and within 3 working days it completes and sends to him the intervention report;
m) analyses annually the endowment with the technical means of fire protection and ensures its completion, according to the norms in force;
n) immediately communicates to the inspectorate the decommissioning and re-commissioning of any intervention special vehicle, as well as, in writing, the endowment with new intervention special vehicles;
o) ensures, through the available means, the development of fire information and education activities of the population;
p) analyses and solves the citizens' petitions in the issue of fire protection;
q) fulfils any other obligations provided by law for fire protection of the local community.

Obligations of the Local Council (art. 14 of L307 / 2006):

a) approves the risk analysis and coverage plan, for the administrative-territorial unit it represents, establishes the necessary resources for its application and transmits it to the inspectorate within which it operates;
b) issues decisions, in accordance with the law, regarding the organization of the fire protection activity in the administrative-territorial unit it represents;
c) establishes specific rules and measures correlated with the level and nature of local risks;
d) establishes, at the proposal of the mayor, with the approval of the inspectorate, the voluntary emergency service and approves its organization and functioning regulation;
e) appoints the head of the voluntary emergency service, at the proposal of the mayor, with the approval of the inspectorate;
f) provides distinctly, according to the law, from the financial resources of the local budget, the amounts necessary for the organization, endowment, functioning and fulfilment of the legal attributions by the established voluntary emergency services and exercises the control of their use;

g) includes annually in its own budget the amounts necessary for the insurance of the goods from the endowment of the voluntary emergency services, for the cases of damage, destruction or for other events, as well as for the insurance of persons and civil liability of the personnel with attributions on line of intervention. disability or death, produced by accidents, catastrophes or other such events occurred during and due to the fulfilment of specific duties;
h) ensures the inclusion, in the plans of organization, urban development and landscaping, of the access roads for interventions, of the works for the realization of the announcement, alarm systems, as well as of the water supply in case of fire;
i) analyses, every six months and whenever necessary, the fire protection capacity of the administrative-territorial unit it represents and informs the inspectorate about the measures established for its optimization;
j) ensures buildings and spaces properly arranged for the operation of the voluntary emergency service, as well as the necessary means of communication;
k) fulfils any other attributions provided by law for fire protection.

IV. Duties and responsibilities of public authorities in a general state of emergency / alert due to a pandemic

Overview

It is known that the environment and human society often endure the action of extremely dangerous phenomena of different origin, natural or anthropogenic, which can cause destructive and brutal disturbances in certain systems or predetermined situations.

People live permanently in an environment where they are exposed to a great diversity of more or less dangerous situations, generated by many factors.

Statistics show that in the past three decades, globally, various disasters have determined the death of more than 8 million people, disease and suffering for more than 1 billion people, loss and destruction of hundreds of billions of dollars in property. On average, disasters annually cause 25,000 deaths and about $ 3 billion in economic destruction.

The actual increase in the frequency of catastrophic natural events that is currently being observed, as well as their overall costs, can be attributed to several factors:

- cyclical episodes that govern the various natural hazards on a planetary level;
- global population growth, its concentration in large urban agglomerations;
- increasing the vulnerability of human communities, especially in industrial points / centers-risk factors (nuclear power plants, research laboratories, etc.)
- deficiencies in forecasting due to insufficient prevention measures and activities.

Etymologically, the term hazard comes from the Arabic word "az-zahr", which means dice game.

Hazards are characterized by a series of attributes that outline their spatial, temporal and energetic dimension:

- **magnitude** - exceeding a certain threshold of acceptability, a value limit beyond which damage to man or his goods can occur leads to the occurrence of extreme phenomena;
- **frequency** - represents the degree of repeatability of an event of a given magnitude;
- **speed of manifestation** - is the interval between the first moment of manifestation of a hazard and its maximum moment;
- **temporality** - the appropriation of events on a continuous line from the random to the periodic.

Vulnerability highlights how much man and his property are exposed to various hazards, indicates the level of damage that a certain phenomenon can

cause and is expressed on a scale between 0 and 1, the number 1 expressing the total destruction of property and total loss of life in the affected area.

Destruction of the environment leads to an increase in vulnerability. For example, deforestation leads to increased erosion and landslides, faster and stronger floods and increased vulnerability of settlements and roads.

Risk is defined as the probability of exposure of man and the goods created by him to the action of a certain hazard of a certain size. The risk represents the probable level of loss of human lives, the number of injured, the damages caused to the properties and economic activities of a certain natural phenomenon or group of phenomena, in a certain place and in a certain period. The elements at risk are represented by the population, by properties, by means of communication, economic activities, etc., exposed to the risk in a certain area.

Risk can be expressed mathematically, as the product of hazard, elements of risk and vulnerability:

R = H x E x V

where R = risk, H = hazard, E = elements exposed to risk, V = vulnerability.

Biological hazard (Biohazard) is represented by epidemics (from the Latin epidemia, and the French épidémie) and by *insect invasions*.

Epidemics are characterized by mass disease of the population due to pathogens such as viruses, rickettsia, bacteria, fungi and protozoa.

A pandemic can be defined as a global epidemic, which occurs when a new type of virus appears, which spreads similarly to known viruses. Because the virus is new, the human immune system will have little, if any, immunity to the new virus.

To date, the latest pandemic, the AH1N1 (swine flu / Mexican flu) pandemic, was declared by the WHO in 2009. It ended in August 2010, but has continued to fall victim each season.

The most severe pandemic of the last century was in 1918, during the Spanish flu. About 500 million people have been infected, a third of the world's population since then. 50 million people have died worldwide.

Romania has faced epidemics, but also pandemic threats, eloquent examples being: West Nile neuroinfection in 1996, meningitis with 3/23 Enterovirus Echo in 1999, anthrax in 2000, the appearance of influenza infection with a new influenza serotype or the threat of epidemic H5N1 bird flu.

The pandemic can be the result - in constant evolution - of the combination between the virus of animal origin and that of human origin or it can be generated following the progressive mutations of a virus of animal origin.

The classic case of a pandemic spreading takes place in successive waves, with an installation period of 2-4 weeks and a duration of 8-12 weeks at a difference of a few months or more. On the other hand, due to the globalization of trade, it is possible for the pandemic to spread without successive waves.

Description of the SARS-CoV-2 virus

Also known as Wuhan coronavirus, the outbreak of Chinese pneumonia or Wuhan pneumonia began on December 12, 2019 in downtown Wuhan, China, when a group of people with pneumonia of unknown cause appeared, it was mainly related to the owners of stalls working at the Huanan fish market, which also sold live animals.

Subsequently, Chinese scientists isolated a new coronavirus, called 2019-nCoV, which turned out to be at least 70% similar in the SARS-CoV gene sequence. In Wuhan, in December 2019, an inaugural group of cases showing symptoms of "pneumonia of unknown cause" was linked to the Huanan food wholesale market, which had a thousand stalls selling fish, chicken, pheasants, bats, marmots, venomous snakes, deer and the organs of rabbits and other wild animals (ye wei, bush meat). The immediate hypothesis was that this was a new coronavirus from an animal source (a zoonosis).

Coronaviruses circulate mainly among animals, but are known to evolve and infect humans as in severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) along with four coronaviruses that cause mild respiratory symptoms similar to common colds. All infected coronaviruses in humans have been shown to spread from person to person.

In 2002, an outbreak of SARS, which began in China, led to more than 700 deaths worldwide. The virus originates in horseshoe bats, then transmitted to humans through civets in the markets of live animals and with the help of several super-spreaders and international air travel, reaching as far as Canada and the United States. The last case of SARS occurred in 2004. At the time, China was criticized by the World Health Organization (WHO) for treating the epidemic; Since 2000, WHO has coordinated international responses to this and other new diseases, including MERS and swine flu since 2009. Ten years after the onset of SARS, dromedary-camel coronavirus, MERS, has resulted in more than 850 deaths in 27 countries.

The association of the Wuhan outbreak with a large seafood market has led to the presumption that the disease has an animal source. It was feared that it would be similar to the previous outbreak of SARS, a concern exacerbated by the expectation of a large number of passengers for the Chinese New Year, which began on January 25, 2020. health by the WHO.

The first cases of coronavirus in Romania and the Republic of Moldova were confirmed on February 26 and March 7, 2020, respectively. On March 11, 2020, the World Health Organization declared that the coronavirus outbreak had become a pandemic.

V. Establishment of the state of emergency and declaration of the state of alert. Context and implications

Organizational structures

In the context of the COVID-19 pandemic, taking into account the experience of countries severely affected by the evolution of the virus and measures that had a positive impact in limiting its spread and aimed at public health actions, while limiting or interrupting non-essential restricting the exercise of fundamental rights and freedoms, without which the other actions carried out could not have had the expected effect, by Decree no.195 / 16.03.2020 (M-Of.212 / 2020) The President of Romania established the state of emergency at national level.

Starting with May 15, 2020, by **the Decision of the National Committee for Emergency Situations no. 24 / 14.05.2020, the state of alert** was declared at national level, for a period of 30 days.

The alert regime is regulated by GEO 21/2004 on the National Emergency Management System, with reference to '*"... immediate implementation of action plans and measures for prevention, warning of the population, limitation and elimination of the consequences of the emergency situation* " in order to create the legislative framework for the prevention and management of emergencies, ensuring and coordinating the human, material, financial and other resources necessary to restore the state of normalcy.

According to the provisions of art. 41 of GEO no. 68/2020 and of art. 2 of Law no. 55/2020, the alert state represents the response to an emergency situation of special magnitude and intensity, determined by one or more types of risk, consisting of a set of temporary measures, proportional to the level of severity manifested or predicted and necessary for the prevention and removal of imminent threats to life, human health, the environment, important material and cultural values or property.

The following structures are involved in the activity of prevention and management of emergency situations produced by the manifestation of a pandemic on the territory at county level:

- County Committee for Emergency Situations;
- Local Committees for Emergency Situations;
- Professional and voluntary services for emergency situations;
- Deconcentrated and / or decentralized public institutions represented in CJSU;
- The emergency cells of the economic operators source of risk or of the economic operators whose functioning is vital for the normal development of social activities;

- The sanitary units from the county with all the subordinated structures;
- The sanitary veterinary units from the county with all the subordinated structures;
- NGOs with the object of activity providing first aid or support in intervention in emergency situations.

According to WHO1094 / 2005 on the ***National Influenza Pandemic Response Plan*** and the establishment of the ***National Committee and county pandemic influenza intervention committees***, for the operational management of health problems and implementation of response actions, at national level the structure was approved plan, and at the county level the above-mentioned entities were established.

The **fundamental objective** of the *County Emergency Plan* in case of pandemic is to protect the population against an influenza pandemic and aims to fulfil the following intersectoral responsibilities:

- preparing the authorities and the population to provide a rapid and credible response in the event of an influenza pandemic based on the results of scientific research in the field;
- detecting an outbreak of influenza virus during the pandemic alert period and stopping its spread in order to limit the number of infected people and ensure optimal conditions for caring for the sick at home or, as appropriate, in hospital or other facilities;
- stopping as much as possible the phenomenon of spreading the virus during the pandemic, ensuring the optimal means of prevention and adequate conditions of care for the population;
- establishing the attributions of the county and local public authorities, as well as of the other structures subordinated or in their coordination, in order to ensure the coordination and management of the actions, the continuity of the activity and the support functions;
- inventory of forces, means and other categories of resources that will be made available to the authorities involved in risk management, at national and territorial level;
- maintaining the public's trust in the competent public authorities, through a well-coordinated, transparent and continuous communication process;
- capitalizing on the experience resulting from the production of real events and the organization of national or international exercises on this issue;
- maintaining the operative capacity of the structures involved in the management of emergency situations for the fulfillment of the specific missions established in the competence and the intervention in support of the population.

County pandemic intervention committees usually have the following component:

- deputy director of preventive medicine from DSP;

- head of the epidemiology department of the DSP;
- heads of university clinics / sections with a profile of infectious diseases, internal medicine, pediatrics, pneumology;
- a representative of the county college of pharmacists;
- head of the county microbiology laboratory of DSP;
- a representative of the county health insurance house;
- a medical representative of the Ministry of Interior, from the county medical centers, respectively from the municipality of Bucharest, from its own network;
- a medical representative of the Ministry of Interior;
- a representative of the medical structure from SRI;
- a representative of the medical structure from SIE;
- a representative of the county sanitary-veterinary authority;
- the president of the county association of family doctors;
- the director of the county rescue station;
- a representative of the media.

Responsibilities for managing pandemic emergencies

County prefect:

- ensures the application and observance at territorial level of the CNSU decisions, as well as of the orders of the Minister of Administration and Interior;

- coordinates, in accordance with the law, the actions and activities of ensuring and / or restoring public order;

- carries out the training and intervention measures;

- uses the funds specially allocated from the state budget in order to carry out the intervention activities in crisis situations;

- verifies the measures taken by the mayors and by the president of the county council;

- orders the inventory and periodic monitoring of vulnerable persons who risk being isolated at home in case of contact with the disease.

County Council:

- approves the use of the budgetary reserve and of the special funds necessary for the intervention and reconstruction in crisis situations;

- ensures the necessary framework for the provision of public services of county interest in the field of public order, emergency situations, as well as in the field of environmental protection and restoration;

- when establishing the state of emergency, keeps records of the goods subject to requisition, owned by individuals, and communicates, at the request of the beneficiaries or the prefect, data on their existence, condition and characteristics;

- provides the Ministry of Interior with data and information regarding the records of the persons from the county. The Public Health Directorate is the main responsible in the elaboration and implementation of the pandemic response activities.

Mayor:

- is permanently consulted with the representatives of the prefect's institution and the Health Directorate;
- implements protection measures at local level, based on local resources and volunteers of any kind.

Local councils:

- ensure the coordination of public institutions and services of local interest and of commercial companies and autonomous utilities of local interest;
- manage the services provided to the citizens by the community services;
- contribute to ensuring public order;
- coordinate the actions of the voluntary emergency services;
- provide the Ministry of Interior with data and information regarding the records of the persons from the competent territory.

Establishing the attributions of the public authorities responsible for the management of epidemiological / pandemic risks:

a) the current capacity to provide care for affected children and adults in communities, as well as its own staff;
b) coverage and flexibility of emergency medical services;
c) the links between the health care system and the public health departments, including laboratory surveillance and diagnosis;
d) education and training (including training exercises);
e) the establishment of Special Committees for health care, as a central point for planning, preparation and coordinated response.

These special committees will include representatives of hospitals, professional organizations of doctors and nurses and care organizations, home care organizations, long-term care facilities, pharmacists, emergency medical staff and health officials.

Organizational and community planning teams need to be familiar with national and local influenza pandemic preparedness and response plans to ensure that critical elements of the plans are appropriate. It is necessary to inventory the forces, means and other categories of resources that will be made available to the authorities involved in risk management.

Resource management throughout the community can be facilitated by the existence of a real-time tracking system to monitor the impact of the pandemic

on community hospitals. During a pandemic, the tracking system that will be established since the interpandemic period will collect and communicate information on:

a) number of available ICU beds, mechanical ventilation (for adults and children);
b) the number of medical beds available (for adults and children);
c) the number of beds available in the emergency reception units (monitored and unmonitored);
d) the average daily number of patients and the waiting time at the emergency unit;
e) the number of patients waiting to be hospitalized (ERU, offices, etc.);
f) the number of hospitals assigned to a ERU;
g) morgue capacity;
h) lack of medical materials or protective equipment;
i) maintaining the public's trust in the competent public authorities, in a well-coordinated, transparent and continuous communication process predominantly through the media;
j) capitalizing on the experience resulting from real events on this issue;
k) early detection and control, preferably by the specialized epidemiological network, of the first cases of human infection, imported or domestic, and their contacts with the help of the epidemiological surveillance network;
l) limitation, as far as possible, of travel to affected countries, monitored control at the level of border crossing points, limitation of travel and application of measures to prevent pre-pandemic phases;
m) limiting the contacts in places with a high population density, which favours the infection (diminishing or temporary stopping of the public transport, closing the educational institutions and units, postponing the cultural-sports or other manifestations);
n) administration according to priorities, corresponding to the epidemiological characteristics, both to professionals working in environments with a high degree of exposure, and to persons with a special predisposition to infection, who are likely to develop complications or serious forms of the disease or to favour the spread of the epidemic;
o) the obligation of the professionals exposed to the risk environment, as well as of the population in general, to observe the protection and hygiene measures in case of respiratory communicable viral disease;
p) development of the program for the organization and adaptation of the health system in case of pandemic (Guide for hospitals and other bed facilities is intended to support efforts to plan the response to influenza pandemic of health care providers, health care systems, hospitals, chronic care facilities, nursing homes and other groups that will provide medical services as part of the response to an influenza pandemic).

As recommended for local public health authorities drawing up their preparedness and response plans, private organizations should draw up their own plans by setting up special planning teams which may include decision-makers, important groups of stakeholders and those who have specific technical experience.
Those organizations will consider appointing a coordinator to serve as a point of contact for influenza pandemic planning;

a) adequate organization of triage, in the sense of isolating patients at home or in hospital, in case of increasing the number of sick people, depending on the standards of triage developed (MICs, Permanence Centers, others);
b) the mobilization of some medical and social care units in order to ensure the coordination of the care services both at the hospital and at home or in specially arranged spaces of the affected persons;
c) mobilization at maximum capacity of public health institutions and units;
d) the optimal use of the previously established reserves of medicines;
e) ensuring adequate supply of medicines, medical materials, protective equipment and the like, at all health units;
f) increasing the operational capacity of other structures with attributions in ensuring the support functions;
g) the appointment of an occupational medicine doctor to follow and guide the preventive activity in each public institution (with major implications in the management of emergency situations);
h) dissemination of an electronic poster through e-mail addresses and through the Internet (posting on the websites of public institutions) to inform on the preventive measures of first necessity, available to the entire population;
i) ensuring a permanent social consensus of ethics.

A pandemic is an exceptional situation that will require the definition of priorities for access to health services, an effort of solidarity at all levels and a total commitment from professionals whose activity involves direct contact with patients. In such a situation, it is necessary to reach a consensus on common ethical values in order to ensure cohesion in society, such as:

a) the duty of the society to protect professionals and all those exposed to risks during the exercise of the profession (including their families and occasional employees in the public service) and to ensure the future of the families of those who could become victims of the epidemic; an acceptance by the population of the principle of prioritizing access to limited available resources, including in terms of health products and bringing them to the attention of the public as soon as they have been established;
b) eliminating the stigma of isolated sick people or those in quarantine; o preparation of funeral services to deal with the situation if necessary.

VI. Areas of responsibility and general principles of emergency response

The management of risk types involves identifying the types of risk and associated risks, establishing the responsible authorities, by types of risk, establishing the areas of action of the responsible authorities, for preventing, preparing and responding to the event and restoring / rehabilitating the situation. support.

Emergency management is the identification, registration and assessment of risks / types of risk and their determinants, notification of stakeholders, warning the population, limiting, eliminating or counteracting risk factors and last but not least the negative effects and impact produced by the negative / exceptional events they can generate.

In other words, emergency management means the application of policies, procedures and practices whose identified objectives are the analysis, assessment, treatment, monitoring and reassessment of risks in order to reduce them so that human communities (citizens) can live, work and meet needs and aspirations in a sustainable physical and social environment. In other words, the management of emergency situations has as "zero priority" the increase of the degree of civil security.

In this context, *Government Decision no. 557/2016 clearly establishes the responsibilities of public authorities and institutions for ensuring the management of risk types in five areas of action:*

- **prevention** - the set of actions carried out by the responsible authorities, aimed at identifying, assessing and reducing the risks of emergencies, in order to protect life, the environment and property against their negative effects;
- **preparation** - the set of preliminary measures and actions, subsumed to the prevention and response activities, on a permanent basis, carried out by the responsible authorities;
- **response** - the set of actions carried out by the authorities responsible for planning, organizing, coordinating and operational management of the capabilities involved in operational intervention actions to limit and eliminate the negative effects of the emergency, until the restoration of the temporary state of normalcy;
- **post-event investigation / evaluation** - the set of actions carried out by the authorities responsible for establishing and quantifying the effects, causes and circumstances that led to the occurrence of the emergency situation or events associated with it.

Also, the *types of risk are distributed according to the field of competence of the responsible authorities*, according to annex no. 1 of the judgment.

Responsible authorities, by type of risk:

- the authorities and specialized bodies of the central public administration, including the territorial structures subordinated, under their authority or under their coordination;
- local public administration authorities;
- economic operators holding a license.

Also, the types of risk are distributed according to the field of competence of the responsible authorities, according to Annex no. 1 of the normative act.

As an exception, in emergency situations generated by the simultaneous manifestation of several types of risk or by the manifestation of certain types of risk, other than the identified one, at the request of the head of the Department for Emergency Situations within the Ministry of Internal Affairs, National Committee for Special Situations may establish responsibilities including for other ministries and bodies of central and local public administration than those provided in Annex no. 1 of the Decision.

At the territorial level, the management with maximum efficiency of the emergency situations that may occur involves, among others, the elaboration of a document called: The Risk Analysis and Coverage Plan and the Framework Structure of the Risk Analysis and Coverage Plan.

For this purpose, the General Inspectorate for Emergency Situations, through the county / municipality inspectorates of Bucharest for emergency situations, follow the implementation of the provisions of ORDER no. 132 of 29.01.2007 for the approval of the Methodology for elaborating the Plan of analysis and coverage of risks and of the Framework Structure of the Plan of analysis and coverage of risks.

The responsibilities regarding the analysis and coverage of the risks belong to all the factors that, according to the law, have attributions or provide support functions regarding the prevention and management of emergency situations in territorial profile.

RACPs are drawn up by the county / municipality committee of Bucharest for emergency situations, respectively by the local committees for emergency situations and are approved by the county council / General Council of Bucharest, respectively by the local councils, corresponding to the administrative-territorial units on which represents them.

RACPs are drawn up and approved within a maximum of 60 days from the approval by the prefect of the "Scheme with territorial risks in the administrative-territorial unit", developed by the county / municipality inspectorate of Bucharest for emergencies and is updated at the beginning of each year or whenever there are other risks than those analysed or changes in the organization of structures

that, according to the law, have responsibilities or provide support functions for the prevention and management of emergencies in the territorial profile.

The prefects, the general mayor of Bucharest and the mayors are responsible for ensuring the necessary conditions for the elaboration of the RACP. In order to support the activity of risk analysis and coverage, the county councils / General Council of the Municipality of Bucharest and the local councils can order the specialists in the field to elaborate studies, forecasts and other specialized materials.

After elaboration and approval, RACP are made available to the permanent technical secretariats of the county / Bucharest / local committees for emergency situations, and extracts from the respective documents are sent to the other institutions and bodies with attributions in preventing and managing the risks generating emergency situations, having the obligation to know, in the parts that concern them, the content of the plans and to apply them, corresponding to the specific emergency situations.

The county / municipality inspectorates of Bucharest for emergency situations, through the operational centers, ensure the preparation, organization and coordination of the response actions, as well as the elaboration of specific intervention procedures, corresponding to the types of risks generating emergency situations.

Economic operators, public institutions, non-governmental organizations and other structures in the administrative-territorial unit have the obligation to make available to the committees for emergency situations all the documents, data and information required for the preparation of the RACP.

Documents, data and information the disclosure of which may prejudice the national security and defence of the country or are likely to cause damage to a legal person governed by public or private law shall be subject to the rules and measures established by the legislation on the protection of classified information.

The principles of emergency management are:

a) forecasting and prevention;
b) the priority of protecting and saving people's lives;
c) observance of fundamental human rights and freedoms;
d) assuming the responsibility for the management of emergency situations by the public administration authorities;
e) cooperation at national, regional and international level with similar bodies and organizations;
f) the transparency of the activities carried out for the management of emergency situations, so that they do not lead to the aggravation of the effects produced;

g) continuity and gradualness of emergency management activities, from the level of local public administration authorities to the level of central public administration authorities, depending on their magnitude and intensity;
h) the operability, active cooperation and hierarchical subordination of the components of the National System.

VII. The importance and role of voluntary services in emergency situations

According to the provisions of Government Ordinance no. 88/2001 with subsequent amendments, the specialized structures in the field of fire protection and civil protection, subordinated to the central and local public administration authorities are *professional and voluntary community public services for emergency situations***.**

The professional services for emergency situations are established in the counties and in the municipality of Bucharest as deconcentrated public services subordinated to the General Inspectorate for Emergency Situations.

Voluntary emergency services are set up as decentralized public services under the local councils of municipalities, cities and communes and operate under the coordination of the mayor, at the local level.

The Emergency Services and the General Inspectorate for Emergency Situations are part of the protection forces of the national security system and have the following main purposes:

- *protection of life, property and the environment against disasters;*
- *implementation of protection and intervention measures in emergency situations.*

In order to organize, endow, function and fulfill the legal attributions by the voluntary services for emergency situations, the central and local public administration authorities have the obligation ***to provide, separately, in the projects of their own budgets, the necessary financial resources*** (OG88 / 2001, art.19).

According to the provisions of art.19 and 22 of OMAI 75/2019, depending on the composition, voluntary services are classified as follows:

a) **V1 services type** - at the level of the administrative-territorial units that have in evidence a number of at most 1,000 households and / or collective residential buildings;
b) **V2 type services** - at the level of the administrative-territorial units that have in evidence a number between 1,000 and 3,000 households and / or collective residential buildings;
c) **V3 type services** - at the level of administrative-territorial units that have in evidence a number of over 3,000 households and / or collective residential buildings.

The V2 type services have the obligation to be equipped with a water and foam extinguishing truck, and the V3 type services, with at least two water and foam extinguishing trucks.

Voluntary services that have one or more water and foam fire trucks, but do not have the obligation to equip them, may be set up as V2 or V3 services, regardless of the number of households and / or collective residential buildings. in the area of competence.

Volunteer service is staffed with specific staff and volunteer staff.

The personnel employed on specific positions have the professional qualification or competencies of those positions, certified according to the regulations in force.

The position of head of voluntary service must be filled by staff employed in this position, and the position of special driver is held by staff employed in this position or by staff employed in other positions within the local public authority, which has the specific competencies of the position, certified according to the regulations in force.

Module 2

VIII. Protection of the civilian population in emergency situations. Analysis. Evaluation. Decision making. Information flow

Introduction

Humans live permanently in an environment where they are exposed to a great diversity of more or less dangerous situations, generated by many factors. One of the most dangerous trends of the contemporary era is the increase in the frequency, intensity and consequences of natural hazards.

According to estimates, at present the direct and indirect losses from them constitute 250,000 victims annually, and the economic loss - from 50 to 100 million US dollars.

The economic damage caused by all types of hazards was estimated in the 1950s and 1990s at 4 and correspondingly US $ 40 billion annually. Over 80% of these losses are due to hazards caused by weather, climate and water, i.e., storms, floods, droughts, etc.

During the years 1992-2001, the hazards caused by weather, climate and water no longer generated more than 622,000 victims and affected the existence of two billion people, they also left millions of people homeless, brought diseases, salt and many sufferings.

In 2016, natural disasters affected more than 445 million people worldwide, and preliminary data provided by the EM-DAT international disaster database show that in the first quarter of 2017, another 80 million people were affected. of 149 disasters in 73 countries. According to World Bank estimates, natural disasters cost $ 520 billion (442 billion euros) a year for the world economy.

The analysis of scientists shows that climate change will reach an irreversible point in the next 20 years. Thus, globally, the temperature will suffer significant increases, which will have a negative result in the spread of diseases and pests with dramatic effects on the health and nutrition of the planet's population. At the same time, precipitation will have a random manifestation, decreasing or increasing in different parts of the globe, which will lead to droughts or floods with devastating effects.

Romania is a country with high catastrophic risks, ranking 87th out of 171 in the top countries with the highest risks of natural disasters, according to the latest study by the World Risk Report. This ranking, compiled for 171 countries around the world, runs the risk of citizens of a given country becoming victims of

a disaster, following natural disasters such as earthquakes, storms, floods, droughts or sea level rise.

Natural hazards are extreme manifestations of natural phenomena, such as earthquakes, storms, floods, landslides, droughts, which have a direct influence on the life of each person, on society and the environment as a whole. In cases where hazards cause extensive destruction and loss of life, they are called ***disasters or natural disasters.***

The effects of these phenomena are so great that the effort to overcome them only with local resources is insufficient. In these situations, rapid interventions are needed on the part of national and international level teams. It is believed that an extreme natural phenomenon can be called a disaster if at least 10 lives are lost or 50 people are injured and if the material damage is estimated at over one million dollars. Reducing the effects of these disasters involves the interdisciplinary study of hazards, vulnerability, risk and, in particular, the development of extensive information and education of the population.

In 1982, Enrico L. Quarantelli argued that, in the new approach, "in addition to the category of natural hazards, a new category was added, that of technological incidents and accidents. These are disasters caused by human error and collective error. "

Later, Kathleen J. Tierney, Michael K. Lindell, and Ronald W. Perry expanded the analysis, emphasizing that "disasters caused by technology agents are a separate category because, on the one hand, social and behavioural patterns that occur in situations of emergency and technological disaster differ from those observed in case of natural disaster, and, on the other hand, those types of events tend to differ in terms of short and long term consequences ".

Therefore, the two types of hazards are distinct both in terms of causes and in terms of reactions and consequences. However, according to David McEntire's theory, natural and technological hazards can generate some chain relationships. A simple scheme could be the following:

1. *natural hazards can trigger other natural hazards;*
2. *natural hazards can trigger other technological hazards;*
3. *technological hazards can trigger other natural / ecological hazards;*
4. *natural / ecological hazards can trigger other biological / natural hazards;*
5. *human / civilian hazards can trigger other technological / biological hazards;*
6. *other unique combinations.*

According to the UN, **technological hazard** is a "*danger originating in industrial or technological accidents, hazardous procedures, damage to infrastructure or human activities that can cause loss of life or injury, destruction of property, social and economic disorder or environmental degradation."*

This type of hazard has as its source the activity carried out by man, more precisely it is related to human intervention in nature, in order to use the elements of the natural environment in their own interest. Examples of this could be: activities that can lead to industrial pollution, nuclear and radioactivity activities, toxic emissions and discharges, dam destruction, transport, industrial or technological accidents (explosions, fires, dispersions).

In recent years, specialized structures for emergency response in Romania have faced a number of non-military risks, which can generate emergencies with a direct threat to national security, resulting in the need to reanalyse the Romanian Government management and coordination of these particularly complex interventions. Thus, it resulted that a unitary coordination of the response structures in emergency situations that threaten the national security, at the level of the Romanian Government, by the Deputy Prime Minister for National Security is necessary. The Department for Emergency Situations was set up at the Executive level, which carries out activities for the prevention and management of emergency situations, headed by a specialist in the field, Secretary of State, appointed by decision of the Prime Minister according to the Emergency Ordinance of Government no.1 of 2014, art.1. Intervention in such emergencies involves cooperation at all hierarchical levels such as ministries, institutions with responsibilities, specialists and experts in various fields of activity, as well as ensuring and coordinating all resources (material, human financial, etc.) necessary to restore the state of normalcy.

From a legal point of view, *emergency management represents the set of activities and procedures used by decision makers, institutions and public services empowered to identify and monitor risk sources, assess information and situation analysis, develop forecasts, establish options for action and their implementation in order to restore the situation of normalcy.*

Emergency management is the identification, registration and assessment of risks / types of risk and their determinants, notification of stakeholders, warning the population, limiting, eliminating or counteracting risk factors and last but not least the negative effects and impact produced by the negative / exceptional events they can generate.

In other words, emergency management means the application of policies, procedures and practices whose identified objectives are the analysis, assessment, treatment, monitoring and reassessment of risks in order to reduce them so that human communities (citizens) can live, work and meet needs and aspirations in a sustainable physical and social environment. In other words, the management of emergency situations has as "zero priority" the increase of the degree of civil security.

Starting with 2004, on the Romanian territory, in order to prevent and manage emergencies, to ensure and coordinate the human, material, financial and other resources necessary to restore the state of normality, it was established

(based on Government Ordinance no. 21/2004 with subsequent amendments) *National Emergency Management System* (SNMSU).

It is organized by the public administration authorities and consists of a network of competent bodies, organs and structures, constituted on levels or fields of competence, with the following composition:

- National Committee for Special Emergencies / National Committee for Weather and Disasters (as appropriate);
- Ministerial committees and other central public institutions for emergencies;
- The county committees for emergency situations, respectively the Bucharest Municipality Committee for Emergency Situations;
- Local emergency committees.
- General Inspectorate for Emergency Situations;
- Professional emergency services and voluntary emergency services;
- Operational centers and intervention coordination and management centers;
- The commander of the action.

Emergency committees are inter-institutional management support bodies, provided by their leaders. They will be organized and operated centrally and locally.

The ministerial committees and other public institutions for emergency situations (composed of decision-makers, experts and specialists from their own apparatus), are set up and function under the leadership of ministers and heads of central public institutions, respectively.

Bucharest Municipal Committee for Emergency Situations - composed of the mayor general, mayors of sectors, heads of decentralized, decentralized and communal household services, managers of institutions, autonomous utilities and companies that perform support functions in emergency management, such as and managers of economic agents who, through the specifics of the activity, constitute potential risk factors. The committee is set up under the guidance of the prefect;

County emergency committees - consisting of: the president of the county council, heads of decentralized, decentralized and communal household services and other managers of institutions and companies of county interest who perform support functions in managing emergencies, as well as managers of economic agents which, by the specificity of the activity, constitute risk factors. The county committee is constituted, under the guidance of the prefects.

Local committees for emergency situations - at the level of municipalities, cities, sectors of Bucharest and communes - members: deputy mayor, commune secretary, city or municipality, as the case may be and representatives of public services and main institutions and economic agents from the respective

administrative-territorial unit , as well as managers or managers of economic agents, subsidiaries, branches or local work points, which, due to the specificity of the activity, constitute risk factors. The committee is set up under the leadership of the mayor and with the opinion of the prefect.

The General Inspectorate for Emergency Situations (IGSU) - a specialized body of the Ministry of Internal Affairs, ensures the unitary and permanent coordination of the activities of prevention and management of emergency situations. Through the National Operational Center ensures the permanent technical secretariat of the National Committee for Weather and Disasters and unitary coordination of interventions for the National Committee for Special Emergency Situations and performs the functions of monitoring, evaluation, notification, pre-alarm, alert and technical coordination of operations at the national level responsibilities in emergency management;

For the coordination and management of actions during emergencies, the National Center for Coordination and Management of Intervention is activated at the central level, a structure intended to support the decision, a structure that is activated at the disposal of the Head of the Department for Emergency Situations (MIA) and incorporates specialists and experts, representatives of the central structures present within the CNCI / CNSSU.

Operational centers - at the level of ministries, other central public institutions with complex tasks and functions in emergency management - performing the same functions as IGSU, in the areas of competence of the ministries and central public institutions at which they operate.

Emergency cells - set up during emergencies at the level of endangered or affected companies, which work with the structures of the National System.

Emergency management operates according to the following principles:

- Prevention and forecasting;
- Protecting and saving the life of the population;
- Respect for fundamental freedoms and human rights;
- Assuming responsibility for emergency management;
- Continued cooperation at regional, national and international level between similar organizations and bodies;
- The activities carried out in order to manage emergencies must be transparent, so that they do not exacerbate the already existing effects;
- Graduality and continuity of emergency management actions, from the stage of the authorities of the local public institutions to the level of the central public institutions, depending on how intense and to what extent they are;
- An active cooperation and a hierarchical subordination of the components that make up the National Emergency Management System.

IX. Purpose and conception of notification, warning and alarm actions

A. NOTIFICATION *- the activity of transmitting the notification messages about the imminence of the occurrence or occurrence of disasters and / or armed conflicts to the central or local public administration authorities, as the case may be, in order to avoid capture and protection measures and includes:*

- Notification about the imminence of occurrence or the occurrence of disasters - aims at the imminence of triggering or triggering some types of risk1;
- Notification of the danger of air attack - aims at introducing air alarm situations and ending the alarm;
- Notification of the use of chemical, biological, nuclear, radiological, conventional and unconventional means - aims at the danger of contamination and the direction of toxic cloud movement.

The notification is an attribute of each legal entity, so there is their obligation to provide the necessary means of notification from sources of their own budget and to become operational by connecting to the system that is created within the respective locality. These means are:

- *roads and telephone circuits permanently rented or temporarily taken over from the territorial telecommunications system;*
- *telephone exchanges;*
- *telephone stations; - radiotelephones;*
- *radio receivers, mobile phones, etc.*

B. WARNING - *consists in bringing to the knowledge of the population the information about the imminence of the occurrence or the occurrence of some disasters and is carried out by the central or local public administration authorities, as the case may be, based on the notification transmitted by the competent structures.*

The warning is made by the local public administration authorities, through specific warning means, as a result of the notification made by the County Operational Center (COJ) of the Inspectorates for Emergency Situations of Bucharest / county or based on information or warnings received from economic operators source of risk or population.

In 2018 the D.S.U. carried out activities for the national implementation of the "RO-ALERT" emergency warning system. The RO-ALERT system allows the broadcasting of Cell Broadcast messages for warning and alarming the population in emergency situations, according to the legal provisions.

The RO-ALERT system is used in major situations where the lives and health of

citizens are endangered, such as extreme weather events, threatening floods, terrorist attacks or other situations that seriously threaten communities.

The content of the warning message and the information related to the area in which it is to be broadcast are transported through private interconnection links of the RO-ALERT System with the networks of the mobile telephony operators.

Cell Broadcast technology, on which the RO-ALERT System is based, allows mobile communications antennas in the selected area to broadcast the warning message to all mobile phones operating in their coverage area. The names and phone numbers of mobile phone users are not required, so they remain unknown.

The transmission of the warning messages can be done from the DSU, CNCCI, IGSU headquarters, respectively from the ISUJ dispatchers.

Mobile phones, compatible with Cell Broadcast technology and functional in the coverage area of the antennas broadcasting the alert, will automatically display the content of the warning message.

How the message is displayed and the sound of the alert notification may vary depending on the type of phone.

RO-ALERT messages can be received throughout Romania where there is a 2G / 3G / 4G GSM signal. It is not necessary to install applications on mobile phones. It does not matter if you have subscription or prepay services and no costs or fees are charged for receiving RO-ALERT messages. If the phone is not turned on or has no signal, no alerts can be received.

C. PRE-ALARM – *transmission of messages / warning signals to the authorities about the probability of disasters or an air attack.*

The pre-alarm is made by the General Inspectorate for Emergency Situations or by the professional emergency services, as the case may be, based on the information received from the General Staff (Air Force General Staff) and from the specialized structures within the armed forces categories, based on cooperation plans drawn up for this purpose, as well as from the structures that monitor the sources of risk.

The air pre-alarm is transmitted when the air targets are at a distance corresponding to the flight time of 15-20 minutes from the state border of Romania.

When a state of war is declared and a surprise attack takes place, the first air pre-alarm and air alarm message is transmitted with the approval of the Minister of Internal Affairs.

D. ALARM - *transmitting messages / warning signals to the population about the imminence of disasters or an air attack.*

The air alarm is transmitted when the air targets are at a distance corresponding

to the flight time of 7 - 10 minutes from the state border of Romania.

The *cessation of the air alarm* is transmitted when the air targets have moved away from the state border of Romania, at a distance corresponding to the flight time of 7 -10 minutes.

The alarm is carried out by the central or local public administration authorities, as the case may be, through specific alarm means, based on the notification from the authorized structures.

During disasters, the alarm is executed in order to protect the population and material goods in the threatened areas and to take initial measures to defend and limit the effects.

During the armed conflict the alarm is executed in order to:

- *Protect the population and material goods in the areas where military actions are to be carried out;*
- *Diminish the impact on utilities (electricity, water supply, etc.);*
- *Reduce the number of victims among the civilian population.*

Messages on the use of chemical, biological, nuclear, radiological, conventional and unconventional means address the danger of contamination, the direction of movement of the toxic cloud and are transmitted on the basis of data and information received from the General Staff and specialized structures within the army force categories, based on the cooperation plans concluded according to the legislation in force.

The principles underlying the warning and alarm notification operations are:

Opportunity - is achieved by means and warning and alarm systems that can be acted upon immediately in the event of danger of disasters or air attacks, in order to prevent the population in a short time.

Authenticity - involves the transmission of signals to prevent the population by specific means only by staff established by written provisions of the President of the Local Committee for Emergency Situations.

Stability - involves the prevention of the population and economic operators in any situation.

According to this principle, the Local Committee for Emergency Situations will adopt the necessary measures for:

a) maintaining the alarm means in permanent operation;
b) the use of several types of alarm means whose operation is ensured by at least three different energy sources: industrial network, generators, accumulators, compressed air, steam, fuels and the like;
c) periodic verification of the devices for actuating the alarm means;
d) restoring to the state of operation, in a short time, the alarm systems and means affected by the air attacks;
e) the acoustic intensity of the alarm signals to be at least 6–10 dB higher than

the background noise.

Priority - involves notification, warning and alarm depending on the strategic importance or exposure to the types of risk identified and analysed in the **Risk Analysis and Coverage Plan at the level of each administrative-territorial unit.**

According to this principle, the existing alarm means will ensure:

Types of risk:				
Priority:	Normal: 	Tehnological 	Biological 	Air attack 
Emergency I	**Evacuation / shelter of the population from the areas / objectives** where these operations are required in a short time			
Emergency II	Protection of relocable heritage values			
Emergency III	Self-protection measures for objectives that may generate risks associated with the main risks and / or of vital interest			

Warning and alarm messages are transmitted obligatorily, with priority and free of charge through all telecommunications systems, radio and television stations and networks, including satellite and cable, operating in Romania, at the request of the chairmen of the emergency committees, according to protocols concluded in this respect with the communication operators.

The documentation related to the location and installation of the sirens is presented for approval to the General Inspectorate for Emergency Situations - Notification, Alarm and Evacuation Service 30 days before the launch of the legal formalities for contracting the design works.

Alarm signals last 2 minutes for all audible alarms except compressed air sirens for 1 minute.

The means of notification and alarm are operated only by the persons nominated in the local plans for notifying the population in order to avoid in this way the possibility of creating false signals.

The acoustic alarm signals of the population, public institutions and economic operators are:

	3 sounds of 32 seconds each, with a break of 12 seconds between them Pre-alarming the population about the appearance of the immediate danger of hitting the respective objective (locality)
	15 sounds of 4 seconds each, with a pause of 4 seconds between them Preventing the population from the immediate danger of hitting the locality
	5 sounds of 16 seconds each, with a 10 second pause between them Preventing the population from the danger caused by natural disasters
	continuous sound, of the same intensity, lasting 2 minutes Notifying the population about the cessation of the state of danger

X. Establishing the location and organizing disaster camps for the localities in difficulty

Disaster camps are organized before, during or after the manifestation of potential risk factors generating emergencies, when the accommodation capacities provided in the evacuation plans for receiving the population, material goods and animals are insufficient or have been affected by disasters.

The districts for disposing of the disaster camps are established in normal time, in the evacuation plans for emergency situations, by the local committees for emergency situations, are approved by the professional emergency services and are approved by the presidents of the county committees for emergency situations, respectively of the municipality of Bucharest and its sectors.

Accommodation conditions are provided in the disaster camps, with the application of prophylactic norms of individual and collective hygiene, supply of basic food and drinking water, food, medical, psychological, religious and veterinary assistance, means of communication, as well as conditions for other necessary activities.

When determining the location of the camp, the local emergency committees shall ensure that it is located outside the area affected or potentially affected by disasters, so as to ensure the protection of the population, the safe storage of material goods and the shelter of animals.

The decision to install the camp for victims is taken by the mayor of the administrative-territorial unit or by the prefect, at the proposal of the emergency committee, depending on the magnitude of the disaster, respectively if it affects one or more localities within a county.

The decision includes the evolution of the disaster situation and its consequences, data on the area of installation of the camp, date and time of entry into operation, itineraries of travel and succession of activities, organization of management, cooperation and logistics, requests and information / communications.

In case of decision by the mayor of the administrative-territorial unit, he informs the county committee for emergency situations in order to transmit the provisions to the structures with logistical, medical, veterinary and public order responsibilities provided in the evacuation plans.

The information of the citizens is made by transmitting to the local radio and television stations or by other means available, at short intervals of time, the communiqués from the county / local committees for emergency situations.

The communiqués contain information about the evolution of the events, the measures and rules that the population must observe, the meeting places of

the victims, consumption restrictions, as well as the place established for the location of the victims' camp, considering the possibility of self-evacuation.

Organization and operation of disaster camps

The camp consists of tents, barracks / modules or can be mixed. Regardless of the type, the camp provides spaces for living, food preparation and serving, personal and collective hygiene, storage of victims' goods and humanitarian aid, as well as medical, religious and veterinary assistance. The variants of arrangement and organization of a disaster camp are presented in Fig.1 (Charts for organization of the disaster camp).

The provision of tents / barracks, special vehicles for water heating and bathing, food tanks, rolling kitchens, electric generators, medical equipment and ecological toilets is carried out by the county committee for emergency situations, according to the evacuation plans drawn up.

The districts in which the disaster camps are located must meet the following requirements:

- *the ground should be horizontal, there should be no possibility of landslides, landslides, as well as the manifestation of the effects of other risk factors;*
- *to have roads and other access roads that allow the influx / outflow of the victims, the supply of basic food and drinking water;*
- *there are, nearby, water sources that meet the needs of personal and collective hygiene;*
- *to ensure possibilities of connection to the electricity supply network;*
- *to offer fire protection conditions.*

Depending on the possibilities offered by the land, the surface in which the camp is organized is divided into rectangular portions by longitudinal and transversal lines, which delimit, at the same time, the access roads.

The camp is divided into areas whose size is determined by the size and layout of the necessary tents, barracks, buildings and facilities.

The disaster camp is divided into 3 main areas of activity: the area for management and administration of the camp, the accommodation area and the area of oratorial / household activities.

The area for the management and administration of the camp includes the control point, the reception point, the record and distribution of the victims, the camp management, the medical point, the point of receiving / distributing aid and the management and coordination point of public order and safety measures.

The accommodation area includes tents, barracks and accommodation. The places for the tents are arranged so as to allow their arrangement at intervals of 2.5 m between them, and in depth, the distance should be 5 m.

Within the space and volume of the room, overlapping or non-overlapping beds shall be installed, as appropriate, respecting the distance of at least 50 cm between the rows.

The area of auxiliary / household activities includes: dining room, kitchen, food storage, drinking water supply, laundry, bathing point, sanitary point, collection point for household waste, storage for the goods of the victims, lighting station / generator, intervention cars and special vehicles, ambulances, etc.

The washers are equipped with washbasins, counting one for every 5 to 7 victims and a foot bath for 40 victims. The ecological toilets are arranged so that one cabin for 12-15 victims returns.

Garbage and food scraps are removed daily from the camp in specially arranged places, which are emptied and cleaned periodically.

For the lighting of the disaster camp and the rooms, a backup energy source is provided, respectively an electric generator.

In order to comply with the rules of fire prevention and extinguishing in the camp, places for smoking are established and the fire picket is equipped with first aid means, such as: genetic tools, buckets, sand and fire extinguishers, etc.

Each victim accommodated in the camp is provided with an individual identification badge containing: the serial number from the reception / distribution register; name and surname, series and number of the identity card, the tent / hut in which he is accommodated.

Each victim receives an individual meal card, and the aid is distributed on the basis of a nominal table.

The activity of reception, registration, sanitary triage, distribution of accommodation and storage spaces is regulated by internal provisions by the local committees for emergency situations, under the coordination of the representatives of the county emergency inspectorates.

Medical and sanitary-veterinary supervision is organized and performed in order to ensure the health of the population and the animals that are evacuated, to prevent diseases and epidemics / epizootics and to provide emergency medical assistance and medical / veterinary assistance in case of illness or accident.

Preventive, prophylactic and curative medical care in the camp is provided by specialized personnel from the sanitary-territorial units of the Ministry of Public Health, the Romanian National Red Cross Society and other specialized structures, based on cooperation plans developed by the inspectorates. for emergency situations / of the Bucharest municipality and sent in their extract.

The forces and the means of medical and sanitary-veterinary insurance can be supplemented, as the case may be, by the decision of the county committee for emergency situations.

The local committees for emergency situations establish, through the emergency evacuation plan, the places destined for the evacuation of animals and

birds at the proposal of the sanitary-veterinary directions, whose representatives deal with their records.

The area established for the evacuation of animals and birds is located at a distance specified by the specialists of the sanitary-veterinary directions and is compartmentalized according to the needs.

The measures of public order and safety, the guarding of the camp and the evidence of the persons are carried out the destructions of the Ministry of Administration and Interior and consist in:

- *ensuring public order and safety in the disaster camp;*
- *the record of the affected persons disposed in the camp;*
- *guarding the disaster camp;*
- *participation in the distribution of humanitarian aid.*

These measures are planned, organized and carried out in accordance with the intervention and cooperation plans developed for this purpose by the county / Bucharest emergency inspectorates and sent in extract to the forces with which they cooperate.

The financial funds for the organization, preparation and development of the activities within the camp for the victims are ensured, as the case may be, from the state budget and the local budgets, as well as from other legally constituted sources from normal times.

The logistics of the disaster camps are provided by the county / local councils, for the population and its own employees.

The supply of food and industrial products of strict necessity is made by the committees for local / county emergencies, in a rationalized system, according to the provisions of art. 47 of the Norms regarding the organization and ensuring the evacuation in emergency situations, approved by the Order of the Minister of Administration and Interior no.1.184 / 2006.

Coordination of administrative activities in the camp

The coordination of the administrative activities in the camp is ensured by the head of the camp, appointed from among the members of the local committee for emergency situations by its president.

The head of the camp is directly subordinated to the chairman of the local committee for emergency situations and fulfills, in principle, the following attributions:

a) *organizes and supervises the camp staff, specifying the attributions of each one;*
b) *elaborates the internal functioning regulation of the camp; executes the training of the persons who employ and serve the camp;*
c) *organizes the influx and outflow of the victims and is responsible for the normal development of activities;*

d) is responsible for arranging the camp, for organizing and ensuring the flow of the victims, their accommodation and for organizing the other services;

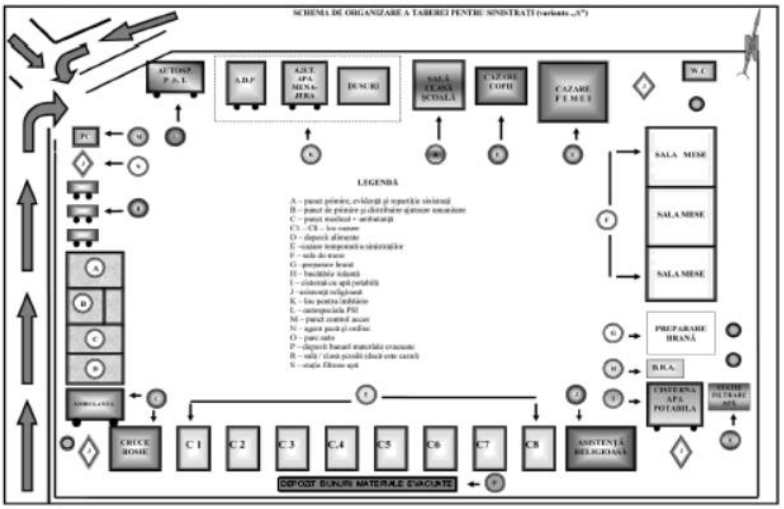
e) periodically informs the local committee for emergency situations regarding the reception / distribution of the victims and other data regarding the situation in the camp.

During the installation and operation of the camp, measures are taken to protect the environment.

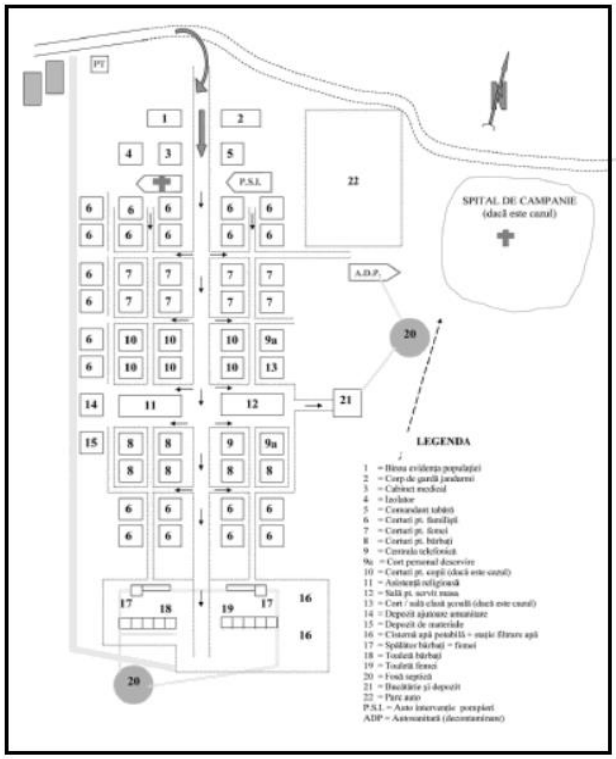
In the camp area it is forbidden to cut wood material, contaminate and pollute water and soil sources, spread waste of any kind and take measures to prevent the destruction of crops, vegetation, roads and protected areas.

When decommissioning the disaster camp, measures are taken to restore the damaged environment.

SCHEMA DE ORGANIZARE A TABEREI PENTRU SINISTRAŢI(varianta "A")



SCHEMA DE ORGANIZARE A TABEREI PENTRU SINISTRAŢI (varianta "B")



Charts for organizing the disaster camp

1. The point of reception, registration and distribution of the victims

It is arranged at the entrance to the disaster camp. Here, the injured persons are presented for evidence by the representatives of the community public services for the registration of persons, on the basis of identity documents or the declaration on their own responsibility and cover the flow established by the accommodation.

The accommodation criteria that will be observed as much as possible are: health status, marital status (married + children, unmarried), ethnicity, religion.
Depending on the situations mentioned above, the victims are distributed in places / accommodation places as follows: men are separated from women and families from the group respecting the religious and ethnic aspect.

2. The point of triage and first aid

It is set up in the yard / barracks where a brief medical check-up is carried out in which the person with different conditions is declared or found (contagious people, contaminated with industrial toxic substances, with psychological problems, etc.) are referred to the infirmary / isolator.

3. Aid distribution point (equipment)

It is the space / tent arranged for the disaster victims to receive, on a signature basis, the necessary equipment and armament. These materials represent the minimum stock that must be constituted before the production of disasters by the local public administration authorities, through the committees of the geniuses.

4. Warehouse for the goods of the victims

In the situation of disaster production, the victims take from their homes goods and materials that are not useful for a short time, they occupy large spaces in the accommodation in the disaster camp and represent attempts by other people, such as jewellery, valuables, furniture, clothing, etc. For these luggage are special storage points. Disaster-contaminated clothing may also occur in the event of a technological disaster, which is particularly dangerous in the community. All these materials will be taken into account, stored and kept under guard until the situation is established.

5. Housing sector

Depending on the number of victims and the concrete possibilities in the respective locality, there will be a sufficient number of courtyards to ensure a short time in the minimum living conditions.

6. Infirmary / medical point and isolator

In principle, it is installed in a place that allows immediate access and is marked visibly with the known distinctive sign. Staffing with specialized medical personnel is absolutely necessary because in other situations, diseases of the digestive system, contagious diseases, intoxications and traumas, specific to the communities, may occur. There is a special agreement for cardiac, diabetic and other chronic diseases.

7. Food storage and kitchen

In emergency situations, the food security of the population and especially of the affected citizens constitutes a primary component of the activity of limiting and eliminating the effects of disasters of any nature.

8. Dining room

The arrangement and equipment of the room / tent serving the food are the prerogative of the administration of the camp.

This point is sensitive from a hygienic and sanitary point of view, especially in the campaign conditions. Serving meals is done in a maximum of two shifts, so that the food does not get spoiled.

The dishwashing point is set close by. It is especially important that the dishes are washed and disinfected centrally to prevent disease among the victims.

9. Laundry and bathing place

If the disaster bar is organized in the locality or in the vicinity of the locality, bathing of the victims and washing of the effects can be effective in the existing profile institutions or in the school institutions.

10. Drinking water reserves

It is very important to ensure a sufficient amount of drinking water in the accommodation of the victims. This reserve will be arranged in such a way that there are distribution possibilities for many consumers at the same time. Periodically, the microbiological content will be checked by the specialized laboratory.

11. Technical sector

The following are set: the lighting station, the generators, the sanitary ware, the special firefighting vehicles, the means of transport, etc.

RULES OF CONDUCT

1. Upon arrival at the camp, go to the reception, records and distribution desk.
2. Declare the persons you know that they have disappeared or died.
3. Declaration of destroyed or lost property.
4. At the first sign of illness, please go the medical assistance point.
5. Check-in to the point of distributing aid for other goods.
6. Hand over the valuable goods to the office / goods disposal point.
7. Keep order, discipline and cleanliness in the camp.
8. Respect the Prevention and firefighting measures.
9. Eat only in specially arranged places for this purpose.
10. Bathe and wash the equipment according to the established programs.
11. Keep the assigned place in the courtyard and in the dining room.
12. Park personally-owned cars only in specially designed places.
13. Consumption of alcoholic beverages is strictly prohibited.
14. Limit your movement only for bare necessities.
15. The specifications of the service staff are mandatory for all members of the board.
16. People with psychiatric disorders may benefit from counselling with a psychiatrist and religious assistance.
17. Leaving the camp without approval is strictly prohibited.

XI. Building the capacity to intervene, establishing recovery and rehabilitation measures after the end of emergencies

In order to ensure the operative intervention in emergency situations generated by accidents or damages to dams, the units that own these constructions, elaborate action plans in case of accidents at dams, according to Annex no. 7 to ORDER no. 192 of August 2, 2012.

In case of accidental pollution on the Danube and on cross-border rivers, the information system is organized and operates according to the International Operation Manual for the Main International Alarm Center (PIAC), and in case of accidental pollution on inland rivers the information system is organized according to SAPA- ROM and the provisions of the county defence plans against floods, dangerous meteorological phenomena, accidents at hydrotechnical constructions and accidental pollution.

In the case of hydrocarbon pollution of the Black Sea, the information system is provided and operates according to the National Plan for preparation, response and cooperation in case of marine pollution with hydrocarbons, approved by Government Decision no. 1593/2002, with subsequent amendments and completions.

1. Organizing, preparing and providing forces, means and intervention materials

Natural and legal persons who own or use land or objectives in areas that may be affected by destructive actions of water or accidents at hydroelectric constructions have the obligation to participate in defence actions and to ensure the proper maintenance and operation of works to the existing defence.

Local committees, economic operators that have objectives that may be affected by floods and dangerous meteorological phenomena, owners of hydrotechnical works, as well as potential polluting economic operators have the obligation to organize and ensure the defence of these objectives with their own forces and means, provided in advance defence plans, adapted to the concrete conditions that may arise.

Leaders, natural and legal persons who own or use land or objectives in areas that may be affected by destructive actions of water or accidents at hydrotechnical constructions have the obligation to constitute nominated intervention formations, endowed with appropriate means and intervention materials. The normative-framework for endowment with means and materials

for defence against floods, ice and the fight against accidental pollution, Annex no. 12 to ORDER no. 192 of August 2, 2012.

In the case of the Local Committees for emergency situations, the activities regarding the defence actions and the assurance of the proper maintenance and operation of the existing defence works are carried out through the Voluntary Services, and in the case of the economic operators through the care of the Private Emergency Services.

The head of the Voluntary Emergency Service performs the function of flood agent at the level of the territorial administrative unit.

The attributions of the flood agent are regulated by the Government Decision no. 846/2010 for the approval of the National Strategy for medium and long term flood risk management.

Voluntary and private emergency services will be trained by specialists from the County Inspectorate for Emergency Situations and the Technical Support Group for managing emergencies caused by floods, dangerous weather events, accidents at hydrotechnical constructions and accidental pollution, on risk categories, for the exact knowledge of the attributions incumbent on them in different emergency situations.

The preparation and training of Voluntary / Private Emergency Services is based on annual and monthly training plans on topics and exercises specific to the risk of accidental floods and pollution.

The County / Bucharest Committees for Emergency Situations have the obligation to constitute forces and means of intervention to support the Local Committees, in case their intervention capacity is exceeded, according to the law.

The county committees, respectively of the Bucharest Municipality for emergency situations, together with the Ministerial Committee, will organize annually simulations of floods, damage to hydrotechnical constructions and accidental pollution on watercourses, in order to verify the functioning of the information flow for these types of risks, will perform applicative exercises for verifying the preparation of the formations, the functioning of the warning-alarm systems and the use of the means and intervention materials, as well as trainings of the personnel involved in the management of emergency situations generated by specific types of risk.

2. Operational intervention measures in emergency situations

The operative intervention measures are carried out in a unitary way, based on the defence plans against floods, ice, accidents at hydro-technical constructions and accidental pollution, which are elaborated on counties, localities and by the users of potentially polluting water, as well as at the basin level.

In the event of a forecast of critical thresholds or their untimely achievement, the Local Committees for Emergency Situations shall take the following measures:

- ensure the permanence at the mayor's office with trained personnel in order to receive the notifications, forecasts and hydrometeorological warnings, of the decisions of the County Committee / of the Bucharest Municipality;
- prepare and transmit operative reports according to Annex no. 8 to ORDER no. 192 of August 2, 2012.;

a) use all existing means to ensure the warning and / or prioritization of the population and the targets in the flood risk areas due to floods from watercourses, runoff from slopes and accidents to hydrotechnical constructions, as they are delimited in local and rural areas;
b) trigger the operative defence actions in the endangered areas, in accordance with the provisions of the approved defence plans, consisting mainly of the permanent surveillance of the risk areas; directing the forces and means of intervention, raising and consolidating the slopes and banks, depending on the maximum forecast quotas; evacuation of population, animals and goods, according to the Emergency Evacuation Plan;
c) take measures to avoid or eliminate blockages with floats and jetties, especially in the areas of ponds and boats, water intakes, water drainage from the built-up area;
d) ensure the participation of the Voluntary Services in the operative actions carried out by the specialists of the units holding works with the role of defence against floods;
e) locate the spilled flows, as well as the ones coming from infiltrations and leaks from the slopes and directs them in the direction of the watercourses, gravitational or by pumping;
f) provide additional resources for water supply of the population during the deficit period.

3. Rehabilitation measures

After the floods, dangerous meteorological phenomena, hydrological droughts or accidents due to hydrotechnical constructions and accidental pollution, the sight of the restoration of the abnormal situation, the County / Municipality Committees of Bucharest and the local and the specialized economic operators were, if necessary, will take several measures:

a) the restoration of the function of water supply, industrial wastewater and sewage installations that have been affected, as well as the evacuation of water from floods and puddles on agricultural lands, through the drainage of drainage channels and the installation of mobile pumping units;
b) application of the necessary sanitary-epidemic measures;
c) establishing the physical and value damages caused by floods, hydrological droughts and accidental pollution and of the measures necessary for the achievement of the affected objectives;

d) restoration of communication roads and bridges, restoration of water pumping installations;
e) restoration of telecommunication and electricity transmission lines;
f) repair and commissioning of water, steam, gas, oil and damaged pipelines;
g) putting back into operation the affected socio-economic objectives;
h) supporting the population to repair or repair households, personal property, damage or destruction;
i) demolition of the hydrotechnical works of the temporary defense, which prevents the abnormal development of the activities and the recovery of the materials that can still be used, the restoration of the degraded settlements, the remediation of the damages to the hydrotechnical works.

The proposals for the restoration of the constructions, other than the hydrotechnical ones, severely damaged by floods, are made on the basis of "Minutes regarding the ascertainment and evaluation of the damages produced according to the dangerous hydrometeorological phenomena", drawn up by the mixed commission of specialists 11 to ORDER no. 192 of August 2, 2012.

At the end of each period of floods, hydrological droughts, accidents at hydrotechnical constructions and accidental pollution, the County and Municipality Committees of Bucharest draw up summary reports according to the content established in Annex no. 9 of ORDER no. 192 of August 2, 2012 for the approval of the Regulation on the management of emergency situations generated by floods, dangerous meteorological phenomena, accidents at hydrotechnical constructions, accidental pollution on watercourses and marine pollution in the coastal area.

XII. Optimal use of existing risk maps for urban planning, education and public information.

Introduction

In the process of implementing Directive 2007/60 / EC on flood risk assessment and management, the second stage is the development of hazard maps and flood risk maps, the deadline for reporting to the European Commission being March 2014. By Article 6 of the Directive, Member States (MS) are required to draw up these maps for the areas designated as having potentially significant flood risk (APSFR) in the first stages of implementation of Directive 2007/60 / EC-Preliminary Flood Risk Assessment (which was amended by the European Commission in March 2012). As in the case of the EPRI stage, the management units (MUs) for which reports were made at European level were considered by the Water Basin Administrations.

Risk maps for earthquakes and landslides

In the last decade, a significant number of countries have begun to use GIS (Geographic Information Systems) software packages to generate landslide risk maps, due to the ability of these programs to manage a very large amount of topographic data and data characteristic of conditions, geotechnical areas in the affected areas. The interdisciplinary approach of landslide risk maps, maps made in a GIS environment containing topographic data, consist in their application in geotechnics, this being a tool that creates new spatial information, by analysing those existing in databases, to help make decisions regarding the complex planning of the territory, with a high technical-economic efficiency.

Nowadays, approximately 80% of the decisions at national or local level, in different fields of activity, such as demography, territorial planning, areas affected by hazards, infrastructure, real estate valuation, etc. involves spatial data and maps. The modern engineer participates in the acquisition, manipulation, visualization and analysis of geospatial data related to hazards, which must be integrated in a GIS, in order to adopt the most appropriate methods of environmental protection and conservation.

The objectivity of the development analysis is given by the use of GIS technology, one of the most modern international technologies. Using GIS technology, following a detailed analysis of the maps used, quick decisions can be made, decisions that can be the subject of valuable development projects at the micro and macro region level.

Local authorities must be aware of the importance of drawing up risk maps by specialists who will take into account the influencing factors, such as the configuration of the natural terrain (slope), the physical-mechanical

characteristics of landslides with landslide potential, heavy rainfall. From spring and autumn, anthropogenic interventions, construction on sloping land, vegetation, hydrology and hydrogeology of the area, to detect, in a timely manner, areas with landslide potential and provide solutions for their stabilization.

Flood risk maps

Directive 2007/60 / EC on floods (DI) requires each Member State (MS) to assess its territory from the perspective of significant flood risk, to map the size of floods, to identify possible negative consequences of future floods on human health, the environment, cultural heritage and economic activity in the areas concerned and take appropriate and coordinated measures to reduce this risk of flooding. By the end of 2011, Member States were tasked with developing Preliminary Flood Risk Assessments (EPRIs) to identify floodplains and coastal areas at risk of flooding (ZRPSI). By the end of 2013, hazard and flood risk maps (HIRI) were to be developed for these areas. On this basis, Member States were to develop Flood Risk Management Plans (MIPs) by the end of 2015.

Romania has designated 12 management units (MUs) under DI. Of these 12 MUs, 11 cover individual basins and correspond to the 11 water basin administrations within the Romanian water management system; the 12th MU, the Danube (RO1000), is not designated as a separate territory, but rather linearly covers the banks of the Danube along seven other MUs.

Instead, under the Water Framework Directive (WFD), Romania has designated a single river basin district (DH), the Danube (also called RO1000); Consequently, DH Danube covers the whole country and thus does not correspond to the territory of UM Danube, which covers only the banks of the Danube.

Romania has prepared and adopted 12 PMRIs, one for each MU, including for the general Danube MU (RO1000) 3: this PMRI will be implemented by the National Administration “Romanian Waters” (with the acronym ANAR in Romanian), together with seven MUs whose territories include the banks of the Danube: Banat (RO1), Jiu (RO2), Olt (RO3), Argeș-Vedea (RO4), Buzău-Ialomița (RO5), Prut-Bârlad (RO11), Dobrogea-Litoral (RO6). All PMRIs have been coordinated at the national level, with contributions from water basin administrations and therefore have the same approach and style.

1. Flood hazard maps

Flood hazard maps indicate the geographical surface that could be flooded in the event of floods, in the case of the 3 scenarios imposed by the Floods Directive.

More flexibility in association of different flood probabilities in the case of the 3 scenarios, so Romania opted

- floods with extreme probability or in extreme cases (which can occur every 1000 years);
- medium probability floods (which can occur every 100 years);
- high probability floods (which occur every 10 years).

For each of these scenarios, the hazard maps shall show the extent of the flooded area and the depth or associated levels, corresponding to the flows with the probability of specific overtaking. Depending on the case, depending on the relevance of the information, MS may decide to represent the flow of water.

In this second stage of implementation, for the creation of hazard maps, the results obtained under the National Program for Prevention, Protection and Reduction of Flood Effects (PPPDEI), were used by a group of specialists, established at the level of ANAR and INHGA based on advanced hydraulic modelling methods, as well as the results of a simplified method of degeneration of floodability curves, applied in the areas covered by PPPDEI.

By G.O. no.1309 / 2005 Ministry of the Environment and Forests approved the program for the realization of the P.P.P.D.E.I. The first studies, based on this Program, started by 8 Water Basin Administrations, were carried out by different national and international consortia.

It should be emphasized that the P.P.P.D.E.I. within this Program, at the level of Romania, approximately 33,500 km lengths of watercourses with an afferent surface of about 89,826 km2 were analysed. It is specified that, at the level of our country, a number of areas with significant potential flood risk (APSFR) have been declared to the European Commission (EC) as part of the Preliminary Flood Risk Assessment (PFRA) as areas with significant potential flood risk (APSFR) of river sectors with a total length of approx. 17,500 km.

Due to the existence of some APFSR areas that were not included in the PPPDEI and for which no detailed maps obtained by mathematical modelling were made, simplified methods for generating hazard maps for floods were developed. Romania's levels were the following:

1. **Methods of mathematical modelling** (advanced methods of hydraulic modelling, developed or applied within the National Program for Prevention, Protection and Mitigation of Flood Effects on River Basins, based on topographic and geodesic, hydrological and hydraulical studies in the period 2007 - 2013.
2. Simplified methods for generating hazard maps for APSFR that are not covered by P.P.P.D.E.I., robust methods, but with a higher degree of approximation, and the result is associated with a higher degree of uncertainty than in the case of shading methods.

The methods used in the P.P.P.D.E.I.

The methods used in P.P.P.D.E.I. are based on complex studies (topogeodesic, hydrological and hydraulic) and include two components: I) topographic and geodetic studies and II) hydrological and hydraulic studies. The following steps have been taken to develop flood hazard maps:

1. Topographic and geodetic studies

Terrain scanning with airborne equipment, utilizing LIDAR (Light Intensity Detection and Ranging) technology or FLI-MAP (FastLinear Imaging-Map) - technological performance procedures, fossils for primary data transmission - in Romania access to the utilization area in the priority considered area, on three levels of precision:

- Level A, situated in the immediate vicinity of water curves, more extended in urban areas, for which it has been obtained high level of detail and superior precision;
- Level B, with a medium level of accuracy;
- level C, where degree of detail is specific for digitized topographic maps 1: 50000 existing in analogue format, the result is digitally found in aerial photography on a surface of 5000 km2.

LIDAR scanning processor results in a Digital Model of Primary Terrain (MDT).

Terrain activities with the right lens, MDT-free ambulatory results in the anterior stage.

Preliminary design and editing of Digital Modules in the Terrain, by integrating tutorial data results from the previous stages.

Correction or transformation of aerial images for the realization of orthophotoplanners. Detailed terrain models realized in the frame P.P.P.D.E.I. about 45% of the Romanian surface has a vertical precision of ± 20 - ± 50 cm and a resolution (cell dimension) of 1-5 m (figure 1).

2. Hydrological and hydraulic studies

Hydrological modelling is realized at the level of hydrographic basin with special software tools. This analysis is based on the calculation of hydrographs by sub-basins, propagation and composition for principal rivers and affluents, the results of hydrological modelling representing the part of the date of introduction in the model of hydraulic realization of water analysis.

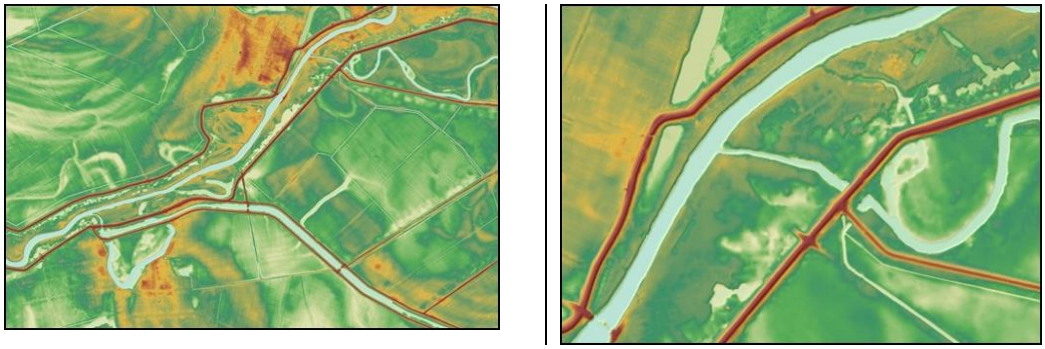


Figure1. Detail of the Digital Model at the Detailed Terrain, with a resolution of 1m; one can observe the precision lines of digits, channels, polders, microreliefs, etc.

Hydrological data of the base at the maximum flow rate in the actual flow regime of the correctors to differentiate the debugging properties, resulting in hydrographs of the afferent flow.

Hydraulic modelling of a sector that identifies water that can be considered in unidimensional (1D) and two-dimensional (2D) simulation, with special software tools, and water course analysis. The hydraulic modelling of the levelling of the base on the base is stable within the limits of the definability of the deflection of the deployment, therefore also on the length of the bridge (figure 2). Hydrological and hydraulic modelling 1D / 2D and transpondering results in GIS format (raster / polygon) in the main realized mathematical model of mathematical modelling based on international plan MIKE 11/21 (Danish Hydraulic Institute), Sobek (Delft Hydraulic), HEC, etc.

Simplified methods to generate hazard maps

Taking into account the financial and time restrictions, it was decided that for the areas not covered by the National P.P.P.D.E.I. Program, to apply simplified methods for making flood hazard maps, as follows:

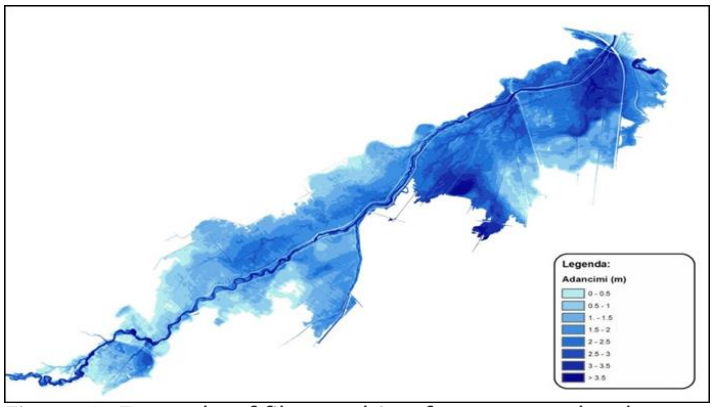


Figure 2. Example of file resulting from water depth

• **<u>Modelling with fuzzy systems</u>**, using as fuzzy variables a series of indicators obtained by GIS processing, indicators that are closely correlated with the

extension of the flood zone. The open source GRASS GIS application was used to apply this method.

• **Simplified hydraulic calculation** - Chezy equation. A second method used was the application of an instrument (ArcGIS extension), developed specifically for the implementation of the Flood Directive by the U.T.C.B. and E.S.R.I. Romania, under the guidance of specialists from I.N.H.G.A. and A.N.A.R. Based on the MDT, transversal profiles are generated, and by applying the Chezy equation the water level corresponding to a certain flow is determined, this being a parameter introduced by the user within the respective application. Generally, these two methods were used either in combination or for mutual verification.

• **GIS procedure for reconstructing** the levels produced at certain events. In some areas where there have been recent floods (2005, 2008, 2010), with flows with a probability of exceeding by about 1%, a GIS procedure was used to simulate the water plan corresponding to the event based on the maximum levels recorded. at the hydrometric stations in the national network. The results were verified and calibrated according to the satellite images recorded during the events and processed by the Romanian Space Agency and the National Meteorological Administration.

• **Hydraulic modelling using the HEC - RAS application**, performed by I.N.H.G.A. It targeted unmodeled watercourses in the P.P.P.D.E.I., but with relatively large basin areas or characterized by extensive floodplains (Târnava Mică, Teuz, etc.). For the generation of flood and depth maps, the HEC RAS program was run, respectively the RAS Mapper function, and for processing, the ArcGIS programs (HEC-GeoRAS function) and Global Mapper.

It is mentioned that the effects of climate change were not taken into account in the modelling and analysis performed.

In order to comply with the requirements of Article 10 of the Floods Directive, respectively to inform the public, under the guidance of the A.N.A.R. and I.N.H.G.A. a portal was created to view the results obtained after the implementation of this second stage of the Directive. An example of viewing hazard maps is shown in Figures 3 and 4.

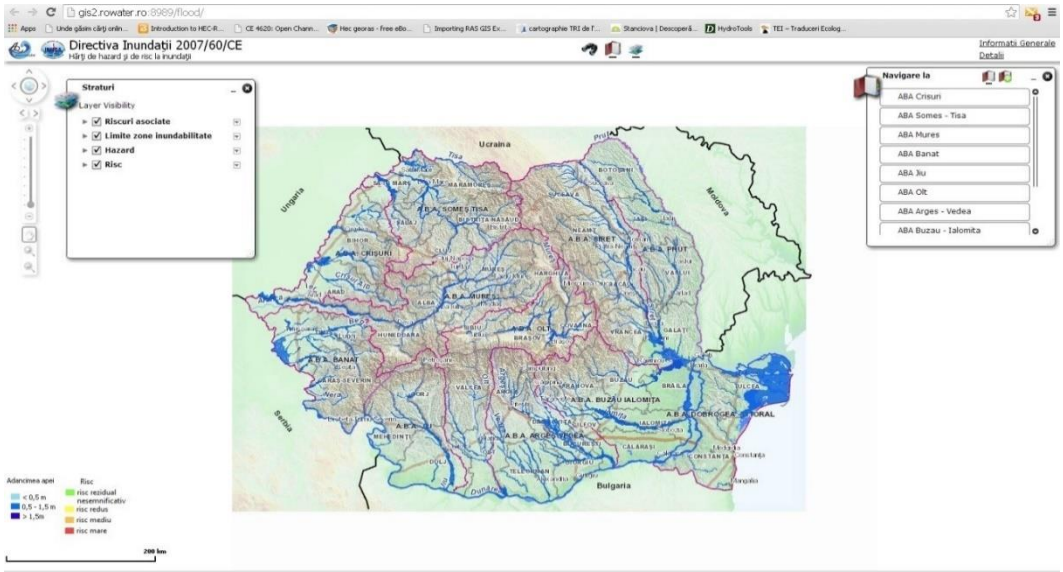


Figure3. Portal for viewing hazard and flood risk maps

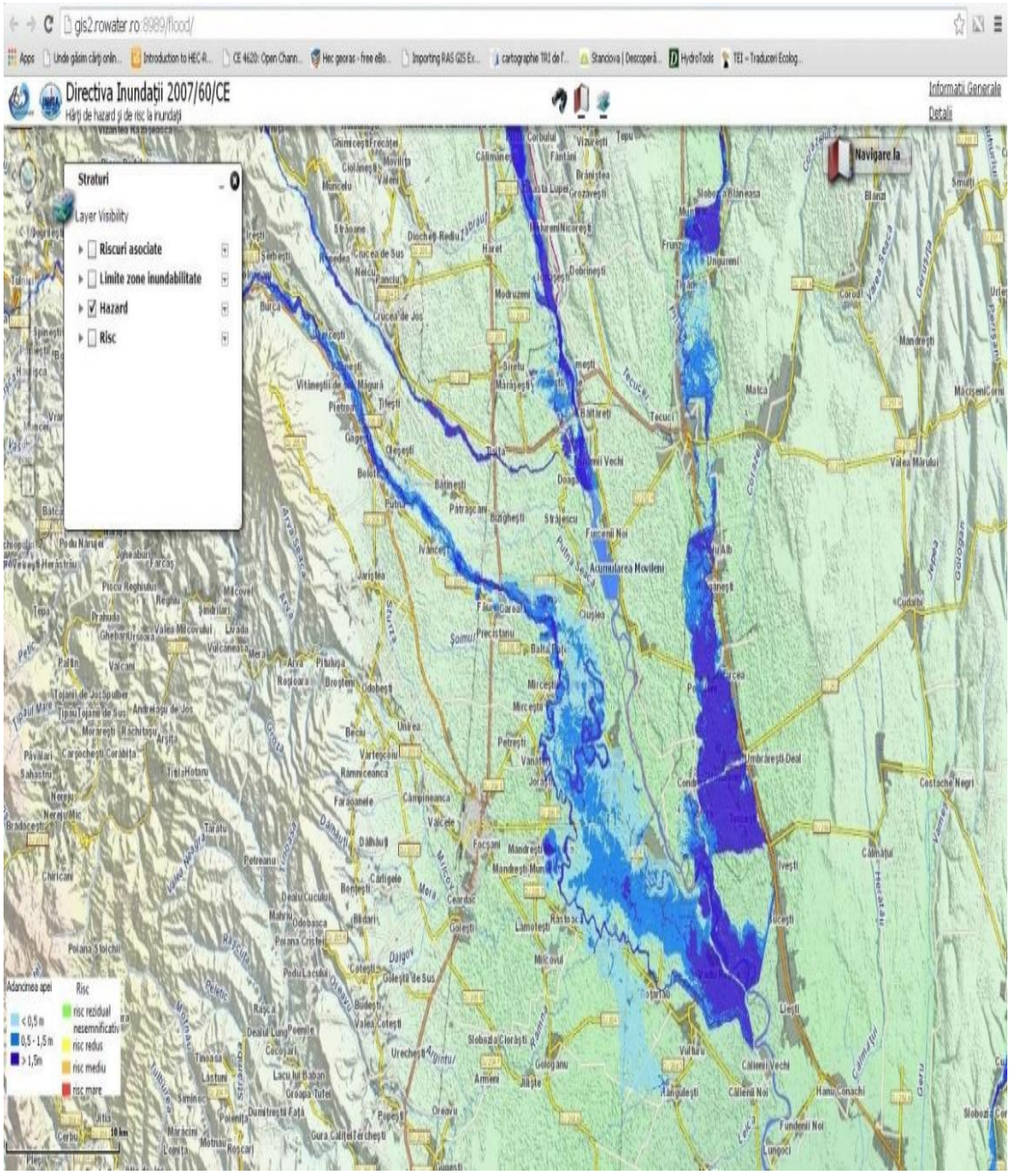


Figure 4. Flood hazard and risk map viewing portal - flood hazard map detail

The project "Creation of flood risk maps for the Banat region in Serbia" was implemented in the framework of the cross-border cooperation program between Romania and Serbia, for the period 2007-2013 (Cross-border Cooperation Program between Romania and Serbia, for the period 2007 -2013). This program laid the foundations for the use of EU funds within their cross-border IPA components, as well as support for cross-border cooperation at the Romanian-Serbian border.

The IPA CBC Romania-Serbia strategy managed to achieve a more balanced and sustainable socio-economic development of the Romanian-Serbian border area.

Crossing border issues as a "division" and promoting closer cooperation and contact between regions and communities on both sides of the border has been one of the objectives of the program.

Based on DIRECTIVE 2007/60 / EC of the European Parliament and of the EU Council of 23 October 2007 on the assessment and management of flood risks (hereinafter referred to as EFD 2007/60 / EC), the main objective of the project was to increase safety related to the risk of floods for the inhabitants of Banat, in the area along the Romania-Serbia border.

Key elements of EU Directive 2007/60 / EC:

- Preliminary flood risk assessment (Articles 4 and 5)
- Hazard and flood risk maps (Article 6)
- Flood risk management plans (Article 7)

The document was prepared in accordance with the EU Floods Directive 2007/60 / EC (hereinafter EFD 2007/60 / EC), Article 6 The purpose of this Directive is to establish a framework for the assessment and management of flood risks, in in order to reduce the negative consequences for human health, the environment, cultural heritage and economic activity and which are associated with floods in the Community.

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• ORDER no. 192 of August 2, 2012 for the approval of the Regulation on the management of emergency situations generated by floods, dangerous meteorological phenomena, accidents at hydrotechnical constructions, accidental pollution on watercourses and marine pollution in the coastal area;
• H.G.R. no. 1854 of 22/12/2005 for the approval of the National Strategy for flood risk management.
• Government Emergency Ordinance no. 21 of 15.04.2004 regarding the National Emergency Management System;
• Decision no. 557 of August 3, 2016 regarding the management of risk types;
• Order no. 192 of August 2, 2012 for the approval of the Regulation on the management of emergency situations generated by floods, dangerous meteorological phenomena, accidents at hydrotechnical constructions, accidental pollution on watercourses and marine pollution in the coastal area.

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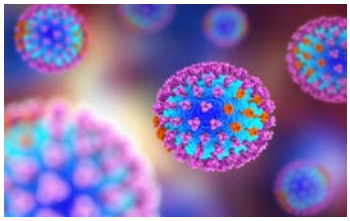



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